

# COMMUNITY CENTRES

THE PRAIRIE BIBLICAL HOUSING CORPORATION  
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# COMMUNITY CENTRES

GENERAL SCIENCES

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Prepared under the auspices of the Prairie Rural Housing Committee, sponsored by the Governments of the provinces of Manitoba, Saskatchewan and Alberta and by the Central Mortgage and Housing Corporation.

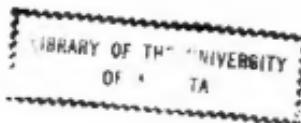
## FOREWORD

At the request of the Prairie Rural Housing Committee the Planning Research Centre of The University of Manitoba conducted a fifteen month program of research into the planning of Community Centres for the rural areas of the three Prairie Provinces. Most of the material based on this research and contained in this booklet can, however, be adapted to the particular requirements of any region.

After extensive initial investigation of community centre planning and construction, a survey of various communities in the prairies was undertaken. The conditions and requirements peculiar to each community were analyzed and studied. In many instances the studies were developed to the sketch plan stage and the resultant plans and perspective sketches were submitted to the community concerned for criticism and further discussion of the problem.

The final results of this development of individual schemes supplied much of the illustrative material for this booklet and also served as the basis for the organization and planning principles set forth.

In preparing this bulletin for the Prairie Rural Housing Committee, we have attempted to maintain at all times a practical and logical approach to the problem of community centre design, and to set down our findings and suggestions in as clear and straightforward a manner as possible. At the same time, we felt that it was desirable to include information, suggestions and examples, which in some instances seemed rather elaborate, in order to establish more clearly the ideal toward which all should strive in developing a community centre.



### FOR FURTHER INFORMATION ON COMMUNITY CENTRE DESIGN, CONSULT THE FOLLOWING:

Co-ordinator of Cultural Activities, Department of Economic Affairs,

or

Department of Extension, University of Alberta,  
Edmonton, Alberta.

Adult Education Division, Department of Education,  
Regina, Saskatchewan.

Department of Municipal Affairs,  
Winnipeg, Manitoba.

Physical Fitness Division, Department of Health and Public Welfare,  
Edmonton, Regina, Winnipeg, Ottawa.

## COMMUNITIES CONTACTED IN MAKING SURVEY

Arborg, Man.	Hinman, Man.	Ponoka, Alta.
Arborfield, Sask.	Kensaston, Sask.	Preecerville, Sask.
Arcola, Sask.	Kerrobert, Sask.	Prince Albert, Sask.
Barrhead, Alta.	Kindersley, Sask.	Red Deer, Alta.
Beausejour, Man.	Lac Vert, Sask.	Riverton, Man.
Boissevain, Man.	Lacombe, Alta.	Riverview, Man.
Carievale, Sask.	Lethbridge, Alta.	Roblin, Man.
Carrot River, Sask.	Lloydminster, Sask.	Rosetown, Sask.
Coleman, Alta.	Lyleton, Man.	Rosthern, Sask.
Dauphin, Man.	Maple Creek, Sask.	St. Walberg, Sask.
Didsbury, Alta.	Medicine Hat, Alta.	Saskatoon, Sask.
Drake, Sask.	Melfort, Sask.	Selkirk, Man.
Gimli, Man.	Melita, Man.	Senlac, Sask.
Gowan, Sask.	Middlechurch, Man.	Shaunavon, Sask.
Grande Prairie, Alta.	Milestone, Sask.	Southey, Sask.
Gretna, Man.	Moosomin, Sask.	Swift Current, Sask.
High River, Alta.	Newdale, Man.	Tisdale, Sask.
High Prairie, Alta.		Unity, Sask.

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## WHO IS THE COMMUNITY?

A community is an aggregation of people in a neighborhood, having a variety of interests and a variety of needs but drawn together by common interests and common needs. These are the interests which must be continually encouraged and the needs which must be satisfied if your community is to remain progressive both in spirit and accomplishment. Remember, your community is you, your family, your friends, your neighbors.

## DOES YOUR COMMUNITY PROVIDE

a place to send your small children to play and take part in organized games?

a place for your teen-agers to hold their Boy Scout meetings or other youth organization meetings?

facilities for your sports and games?

a meeting place in which you and your friends can have large parties?

a place for dances, bazaars or club meetings?

a place where your dramatics club can meet and perform?

a place for concerts?



PARTIES AND DANCES



THEATRICALS



CHILDREN'S PLAYGROUND

WHERE?



INDOOR GAMES



LARGER INDOOR GAMES



## DOES YOUR COMMUNITY LACK:

- a program of activities in which all citizens can participate?
- a spirit of neighborliness and helpfulness?
- sufficient activities to keep the children occupied and happy?

## THEN A COMMUNITY CENTRE WILL HELP

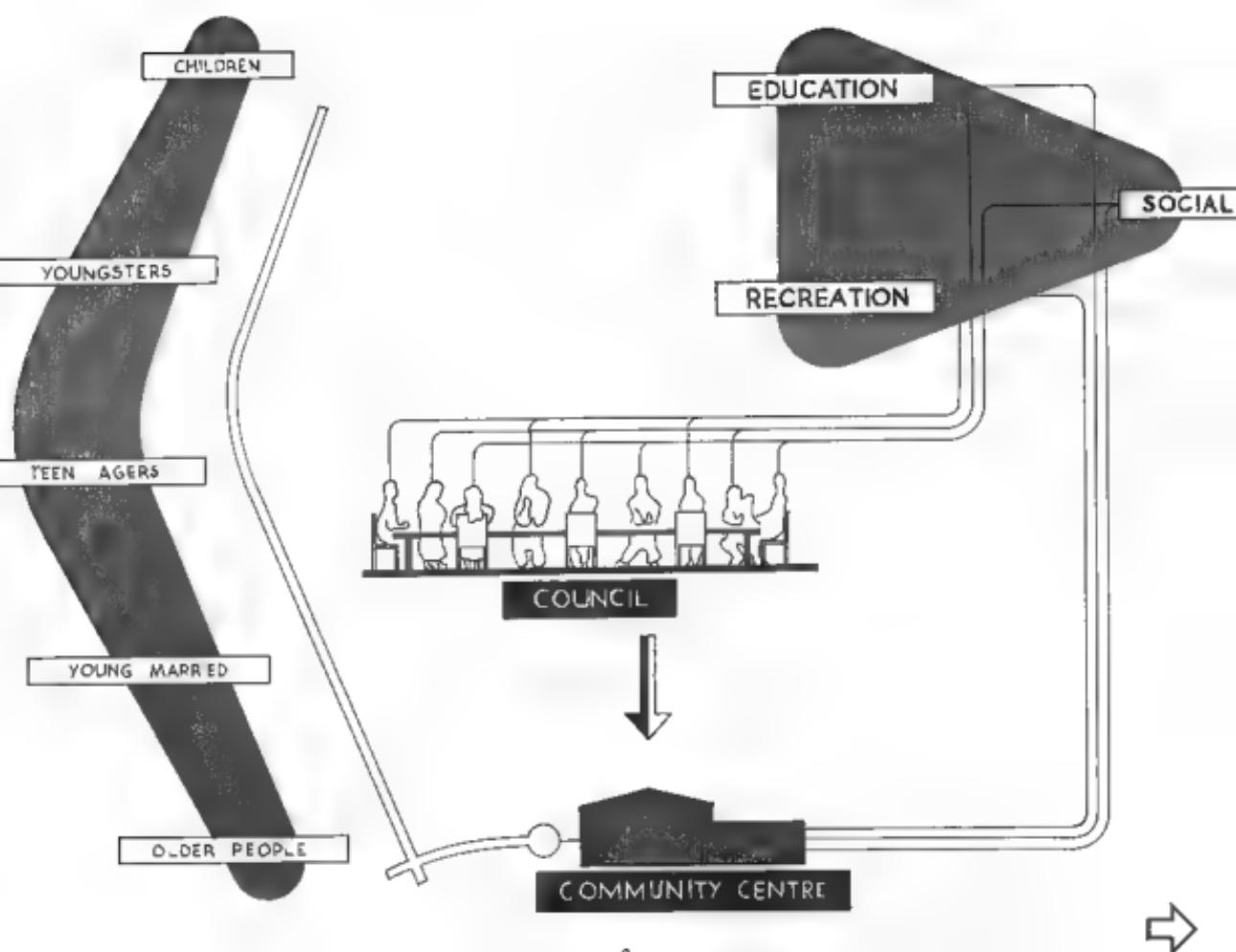
by providing facilities for:

sports - fairs - exhibitions  
dances - banquets - bazaars  
dramatics - movies - concerts  
public meetings - hobbies - crafts  
boys' and girls' clubs and other  
organisations.

by assisting in creating and maintaining civic pride  
and interest.

To meet these requirements, the community centre must be flexible and adaptable to future needs. Its function is never static but changes as the community changes and grows.

The following material has been prepared to give you ideas and suggestions which will assist you in the various phases of the organization and building of a community centre.



## HOW TO ESTABLISH A COMMUNITY CENTRE

Most successful community centre enterprises have developed from the basic organization of an advisory planning committee. This committee is a group made up of representatives of all the public spirited organizations in the community. It is a committee formed to direct all community activity and development and dedicated to the betterment of community life.

## WHY HAVE A PLANNING COMMITTEE?

An advisory planning committee will provide the means for coordinating community activity and will thereby develop the ability to live and work together towards a common goal.

It will prevent overlapping of community services and all effort will therefore be expended where it will be most effective.

Small cultural groups will get support and encouragement whereas they might otherwise be overlooked.

The individual organization is usually interested in only one aspect of community activity while this committee's broader interests will embrace all community activities.

Existing civic offices are engrossed in the everyday job of administration and usually have neither the time nor enthusiasm to carry out such a program. This committee would be dedicated to the development of the cultural, social, recreational and welfare needs of the community.

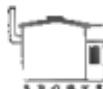
Such a recreation committee will bring together all groups regardless of age, sex, race, religion or economic status. It will encourage tolerance, understanding and justice.

It will provide machinery for setting up a program which will include the activities of all groups in the community, including cultural, social, recreational and welfare organizations.

# THESE ARE THE STEPS IN ORGANIZATION

## GET THE IDEA

One or two individuals realizing the many needs and possibilities of the community must start the ball rolling



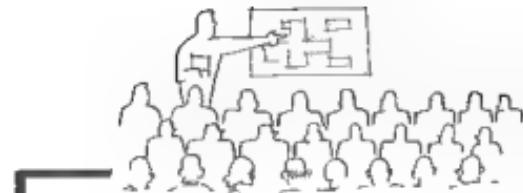
## AROUSE PUBLIC INTEREST

Find out specifically what the major community needs are. Get everyone interested—approach the local service clubs, churches, women's organizations, the school board, prominent public citizens.



#### FORM A PLANNING COMMITTEE

A small keenly interested group must be prepared to put considerable effort into the initial promotion of the scheme, and this group will have to carry on until the organization is complete.



#### ARRANGE PUBLIC MEETINGS

Plan a complete programme of meetings, invite speakers, encourage discussion. Utilise all outlets for publicity. Make the Community Centre a centre "of the people, by the people and for the people".

# THIS IS THE WORKING FORMULA

1. Take time to organize the planning committee. Do not become too dependent upon one or two people for the spark. Have them train people for the job. Switch authority occasionally.
2. Secure the support of all groups in the community. Do not overlook any—the town council, the churches, the service clubs, the women's organizations, the teen-agers' groups, the music club, etc.
3. Secure recognition from influential groups, including local government, boards of trade, etc.
4. Make a survey of community needs and facilities. Answer these questions:  
What leisure time activities are carried on by all groups at present?  
What activities would the people in the community be interested in?  
What facilities are available at present? These will include facilities that have been created by the individual groups. Classify these by the type of space available both in building and land. Be open minded about the use of this space. It may serve a new purpose much better.  
What future developments are planned by the school board, town council, hospital board, parks board, etc.?
5. Collect as much relevant information on community life as possible.

6. Don't spread effort too thinly over too many projects. Start off by trying one or two and do them well. Select a much needed project first, one that can be easily financed. Be aware of public opinion and encourage support
7. Keep the community informed. Let them know what you are doing and what you intend to do. This is important, for without public interest which is best encouraged through knowledge, the work will be seriously handicapped. Use the newspapers, posters, radio, exhibitions, etc. Have the members frequently outline the program to the individual groups they represent. Be patient with the democratic process. It is slow, but it will achieve results
8. Develop a sound financial structure. Money can be raised by
  - Fees
  - Voluntary contributions
  - Grants from existing community organizations
  - Grants from local governmentTaxation--(by including in the Community Centre structure the municipal administrative offices or by combining the Centre with a public or vocational school, money for construction and maintenance can be raised through taxation)
9. Wherever possible consult an architect--the specialist who is trained to help you analyze your community requirements and to develop the ways and means of providing for them.

## DETERMINE YOUR SPACE REQUIREMENTS

A community centre is basically a series of human activities, most of which are of a communal nature. These activities require space. Some need space that is enclosed others need outdoor space only, still others require both.

Nearly every major area requires certain auxiliary facilities which must be considered, such as storage rooms, lavatories, etc.

Certain areas or rooms must serve several purposes. Some should be arranged so that they may be combined for larger functions and others so that they may be split up for smaller functions. Consideration of structural limitations frequently will emphasize the desirability of areas designed for multi-use.

Remember that no matter how detailed your survey, or how farsighted your committee may be, it is impossible to foresee all the future possibilities of your Centre. You should, therefore, plan so that room sizes and relationships can be easily altered within the structural framework of the building. In other words, your plan should be **FLEXIBLE**.

You must plan for future additions as well. Your plan should be **EXPANDABLE**.

# THE SUCCESS OF ANY COMMUNITY ACTIVITY DEPENDS LARGELY ON THE KIND OF FACILITIES AVAILABLE

You cannot have a Community Centre without a program nor can you have a program without a Centre.

The ideal situation exists where the Community Centre consists of a fine building or group of buildings in which all the numerous activities of the community can be carried on. In many instances, however, such an arrangement is not financially possible. Here then is where the need for an Advisory Planning Committee is greatest. The Committee will coordinate community activities in such a manner that maximum use will be made of the existing facilities. Old vacant structures such as stores and halls can be acquired and with slight alterations, put to use as community centres. Other buildings such as the church and legion hall, already serving a limited recreation function, could be made available for a much wider range of activities.

In communities where no such facilities exist and where a new Centre must be constructed, your Planning Committee should aim at nothing short of the very best. Even within the restrictions of limited financial resources, much can be accomplished through sensible planning. Such planning allows the use of the building to determine its location, size, shape and character.

# THE LARGE HALL IS USUALLY YOUR FIRST NEED

## COMMUNITY THEATRE

The importance of dramatic art cannot be over emphasized. It is an integral part of the culture of any people and Canadians are just commencing to develop native culture.

For the encouragement of public support it is better to provide fewer and better seats than to attempt to jam in as many patrons as possible. The interest shown in dramatic art in many of the larger centres in Canada shows the desire of the public to support these activities.

A proper theatre is a great asset to any community drama or music club. It is useful for public meetings, political gatherings, or for the showing of movies. The size and shape of the auditorium itself should be determined by the required seating and also by the placement of seats for proper view of the stage (see page 106).

The stage should be adequate and should have a forestage. Dressing rooms are preferable in a separate wing or in the basement so that sufficient space is left backstage for a workshop and storage. Space is also needed for scenery changes.

With sensible planning, comfortable seating, and an organized program, the public can be shown that drama is one of the most enjoyable and satisfying of the arts.

## COMMUNITY DANCE HALL

Dancing is one of the most popular of communal activities. A properly organized and regulated dance hall can be a great asset to a community. If it is part of a community centre, controlled by a common council, it can be supervised to the satisfaction of the majority. This same hall can have various other uses—carnivals, bazaars, etc.

Ventilation is most important. Most community dance halls function during the summer—why not have some good windows well-placed? Why not have a terrace alongside that can be included in the dancing area?

## COMMUNITY GYMNASIUM

A gymnasium has a very special function and therefore must have special facilities. No gymnasium will function properly unless there is space for an audience. Sport leagues must have active support. The walls, up to head height, should be of non-absorptive material. Tile is recommended. There should be adequate light, natural as well as artificial. There should be good ventilation. Locker and shower space is required. This need not be expensive but must be ample for those who will be using the gymnasium. The planning of locker facilities should be carefully done. Traffic should be carefully regulated and passage through locker areas to lavatories, etc., should be avoided. Storage space is needed for gymnasium equipment.

Although it is not advisable to combine a gymnasium with a theatre or dance hall, it is sometimes necessary where finances and program are limited. The main disadvantages of such a combination are:

The floor must be treated for gymnastic use, after being used for dancing the wax that was applied must be removed before the hall can be used again as a gym. Heavy wear during dances, theatricals, etc., will injure the gym floor, especially during inclement weather when moisture and dirt will be tracked in. However, it would be much cheaper to pay the relatively high maintenance costs than to build a separate gym. Furthermore, the failure to provide for gymnastic activities in the community hall may well result in such activities being ruled out of the community entirely.

Using the hall for so many different purposes may mean the curtailment of some activities due to overlapping. If a community finds that the Centre is so active that overcrowding is encountered, they should plan to erect a separate gymnasium.

Principal among the advantages of the multi-purpose community gymnasium, is the initial capital saving. In addition the lockers and showers can serve the gymnasium, the stage and the outdoor playing areas.

# FOLLOWED BY ADDITIONAL FACILITIES

## MULTI-PURPOSE ROOM

In a small centre, the word "multi-purpose" takes on a far more important meaning than it does in the large centre. In the large centre one room may double up as a nursery-kindergarten, another as a library-meeting room, and yet another as a classroom-clubroom. On the other hand in a small centre, financial conditions may only permit the construction of one area to accommodate all the above activities. To do this adequately the area must be carefully laid out, and properly located with relation to the other areas in the centre. The most logical location is near the lobby where direct access from the main entrance can be provided. A flexible wall common to both the multi-purpose room and the social hall, could separate these two rooms so that they can be merged into one large area providing for the overflow when the main hall is apt to prove too small.

Provision should be made for storage of furniture and equipment that is not required for all functions so that maximum space is available for use at all times.

Window treatment must be carefully planned to provide proper lighting and ventilation for the various activities. Adequate lighting fixtures and convenient outlets should be supplied.

A list of activities that could be held in this multi-purpose area would include: lectures, demonstrations, crafts, farmers' and businessmen's meetings, banquets, region meetings, boy scout and girl guide meetings, church club meetings, etc.

## TOWN OFFICES

Many communities today are concerned with the financial obligation that arises with the erection of a community centre. They manage to raise the funds for actual construction, but are doubtful of the community's ability to shoulder the maintenance costs. One method of overcoming this difficulty is to provide for concessions or rental office space. The inclusion of civic or municipal offices in the centre plan would fit reasonably into such a rental office scheme.

In most small towns on the prairies, the requirements for housing the governing body consist of an office for the town clerk, a smaller office for his secretary and a reception area. The town or district engineer also requires an office and work space. With proper planning, these rooms can be located near or adjacent to a multi-purpose area that could serve as a council chamber. The school board, board of trade and other small groups could also use this multi-purpose area for their meetings.

Another advantage of locating the school board and municipal offices in the centre is the fact that these offices require the full time services of one or more people. Someone from this group could act in a supervisory capacity as schedule man, allocating various rooms and facilities in the building to those organizations and groups desiring to use them.

Other government and independent concerns that might be included in the centre are the town and district post office, the Red Cross headquarters, the fire station, police department, and a medical office for the visiting doctor or dentist.

## COMMUNITY NURSERY

In most existing community centres the planners have given little or no thought to the inclusion of nurseries, considering them inessential. Present day living conditions, however, require that some provision be made for competent supervision of children while the grown-ups are attending social functions. If this supervision is not provided in the centre itself, then young parents must hire sitters to look after their children, or not attend social functions at all. A community nursery would therefore seem to be a very necessary adjunct to any centre.

During the day the nursery could serve as a kindergarten or be used in conjunction with a clinic. It should contain areas and facilities for indoor and outdoor play, rest, sleeping, eating, and medical care. Toilets and storage space are required. Kitchen facilities should be central, and serve other areas of the centre as well as the nursery.

Supervision of the area is highly important. A private entrance and direct connection to outdoor play area are essential. Furniture and cupboards, etc. should be child size.

## SKATING RINKS

Skating, hockey and curling are the most important recreational activities during the long prairie winters. These activities form the hub of community life through such a large part of the year that the rink might logically form the basis of a Community Centre. The need of these facilities may be more readily appreciated than the need of facilities for other activities. An expandable Community Centre building might well start off with a new (or existing) skating and curling rink to which facilities for further needs may be added when finances permit.

## ENTRANCE HALL

This area of the building is one that demands a great deal of careful planning with regard to traffic flow, and considerable forethought as to the character of finishes and methods of illumination to be used. Since it is the area from which the public will form its first impressions, it should reveal the character of the building.

The lobby should provide direct access to the main areas of the centre. It should provide for an easy flow of traffic both into and out of the main auditorium. There should be enough space to allow for rapid exit from the auditorium, as well as for people to gather and converse during intermissions.

It may be found necessary to include a small storm-vestibule at the entrance of the building rather than have the lobby open directly to the outside. This vestibule would not be necessary if a forced air heating system were used. A hot air register could be provided in the floor immediately inside the entrance.

The ticket office should command the entrance and also control the flow of traffic into the auditorium. It should be so placed that queues for tickets do not interfere with an easy flow of traffic through the lobby.

The checkroom should be convenient to the entrance, and should be designed so that line-ups do not interfere with the other lobby functions. Hanger racks should be not less than two feet wide, and aisles between the racks an absolute minimum width of two feet six inches. Approximately five garments can be hung per foot.

The telephone booths should be located in this area.

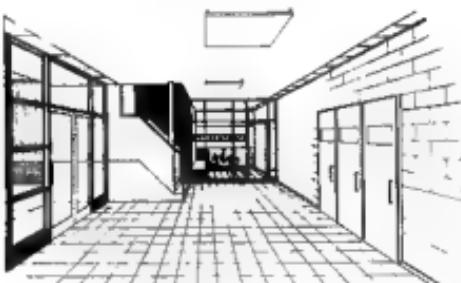
If it is desirable to place memorial plaques in the building the lobby proves to be a logical spot, as all the traffic in the building will pass through this area.

Another feature of the lobby is its value as an exhibition area. Space could be made available for free-standing exhibits as well as wall exhibits. In cases where the exhibits are valuable it might be wise to plan a small area off the lobby to be used solely as a gallery. This area can be separated from the lobby by a glazed partition.



#### ENTRANCE HALL WITH TICKET OFFICE & CHECK ROOM

In this particular scheme the ticket and coat-checking office are situated immediately to the right of the entrance. It is evident that adequate space is available in the lobby to take care of any line-ups that may occur



#### ENTRANCE HALL WITH WAITING ROOM

When the centre has a special feature, in this case a clinic, waiting area should be provided in the lobby. Here, the receptionist's office has been located in a position from which it is possible to have full control over the waiting area.



#### ENTRANCE HALL WITH MEMORIAL

As previously mentioned, the lobby is the logical location for memorial plaques. This scheme has avoided interruption of traffic flow by placing the memorial plaque in a separate area off the lobby. A glazed partition separates but does not conceal the memorial area from the lobby.

## THE REQUIREMENTS ARE KNOWN NOW, BUT WHERE IS YOUR CENTRE TO BE LOCATED?

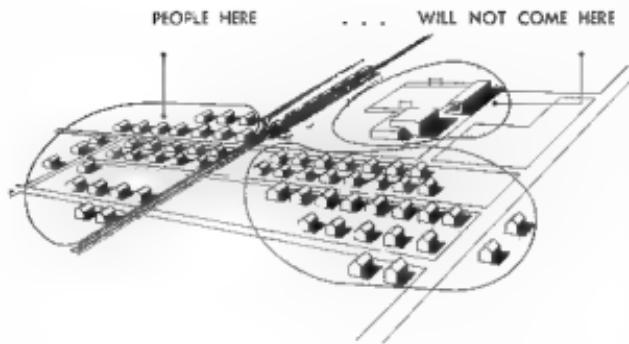
The function of a Community Centre is to serve the cultural and recreational needs of the community. The success of the Centre depends to a great extent on its location.

People are sensitive to any barrier, psychological or physical such as railroad tracks, main traffic arteries, ravines, and boundaries of different income group housing areas. Also, people do not like to travel long distances. It is always possible to locate the natural centre of gravity, which is the area where, for instance, a shrewd business man would choose a site for his neighborhood store. The Community Centre should be easily accessible. In fact, it should fit in with the everyday life of the community as do the school, church and business enterprises. The proper location will help to ensure the financial and social success of the enterprise.

The Community Centre should be considered not only as a building but also as a space where recreational areas make an attractive focal point for participants and spectators. Lacking outdoor amenities, the Centre will be used mainly during the winter and to that extent will fail to fulfil its function as a focal point of community life throughout the year. The best natural features of the site should be preserved. Therefore, do not destroy trees unless absolutely necessary.

In development of the site, orientation becomes a major factor. Certain areas require shelter from the wind and sun. The parking lot, tennis courts, skating rink, and the Centre itself should be protected from the prevailing winds. The Centre may, to some extent, provide its own protection. It should be so designed as to have all service areas, kitchen, lavatories, coatrooms, etc., situated on its northern exposure, thus leaving the warm southern exposures for multi-purpose rooms and classrooms. Properly located shelter belts and neighboring buildings will provide the necessary protection.

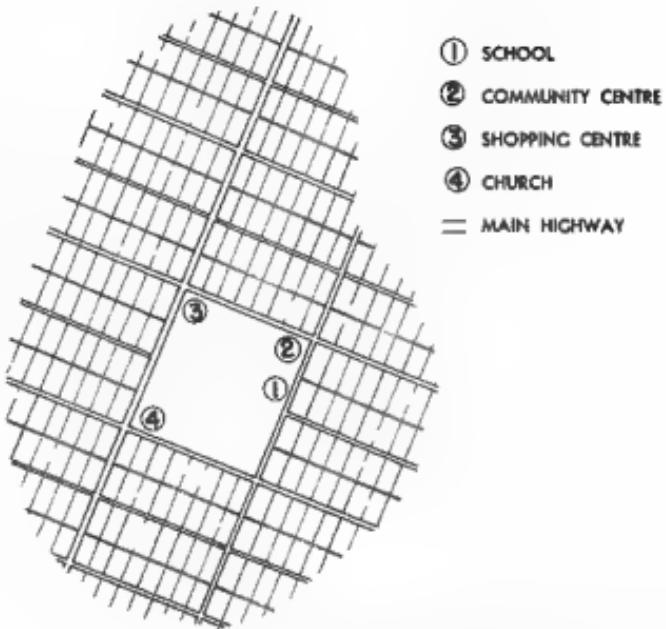
Parking areas are an important part of the site layout and should receive as much attention in planning as other units.



Two of the most important points to be considered are accessibility of the location and its proximity to the centre of gravity of the population to be served.

The Community Centre is a symbol of civic life and pride and therefore should be built in an appropriate setting. Your community is likely to grow, and it is less expensive to allocate sufficient area for expansion at the initial stage of planning than to expropriate developed land at some time later.

It is always a good policy to seek the advice of an architect or city planner on the choice of a site. For a small fee he would see to all the technical details and thus might save the community thousands of dollars.



Proper landscaping of the Community Centre area means more than strips of decorative gardens and flower beds. Above all, the area must be laid out for human use, for both recreation and relaxation. Pleasant park areas should be planned for those who prefer to watch, sit, or take leisurely walks instead of participating in active sports.

## A SITE FOR A SMALL CENTRE MIGHT LOOK LIKE THIS



The site layout on the opposite page was planned for a purely rural area. The site is situated between two small villages and was chosen because of its equal proximity to both. The size of the site is such that no crowding of facilities was necessary and the various sports fields have been quite liberally spaced with relation to one another.

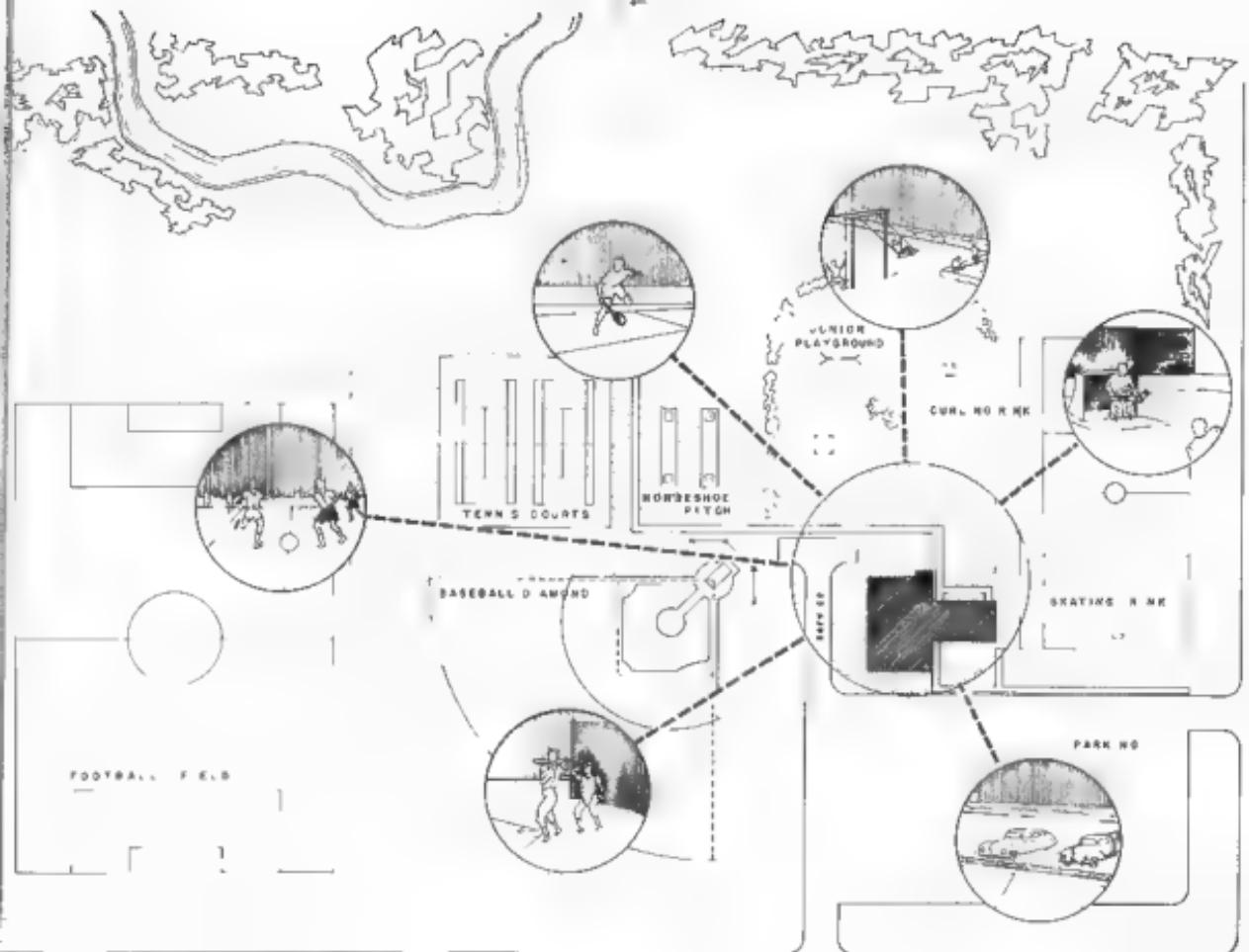
The approach to the site is by either one of two main roads of the district. Notice that the site is directly at the crossing of these roads. Such an arrangement is a necessity in a rural area since only the main roads are of the all weather type. These roads are the links between the more important villages in the area, and it is from these villages that people will come to attend ball tournaments, bonspiels, hockey games, dances, etc. The site is relatively flat and should prove readily adaptable to the layout of the various sports fields.

The buildings were located far enough away from the highway to allow for an adjacent parking area. This parking space is sheltered against the northwest winds by the community centre structure.

The curling and skating rinks have been combined, the curling rink structure acting as a wind-break for the large sheet of ice on the outdoor skating rink. The building contains the waiting area for both the curling and skating rinks.

The planning of the Centre to include a rink makes it possible to hold large summer fairs within the community centre building. The curling rink could be properly floored, and movable stalls could be made for use during such fairs and bazaars.

The junior playground is situated quite close to the Centre. An enclosing hedge replaces the customary fence and separates this area from the area used by the older people. To the west of the Centre are the horseshoe pitches, tennis courts, and ball diamond. These areas are all in proximity to the rear entrances of the Centre which lead to the men's and women's lavatory areas. The junior playground and horseshoe pitches have been located closest to the Centre as they will receive greatest usage. The ball diamond has been placed closest to the parking lot as baseball will be the main attraction during the summer months. A football field has been laid out on the far west side of the site.



## HERE IS THE FIRST EXAMPLE . . . A CENTRE FOR A SMALL RURAL COMMUNITY

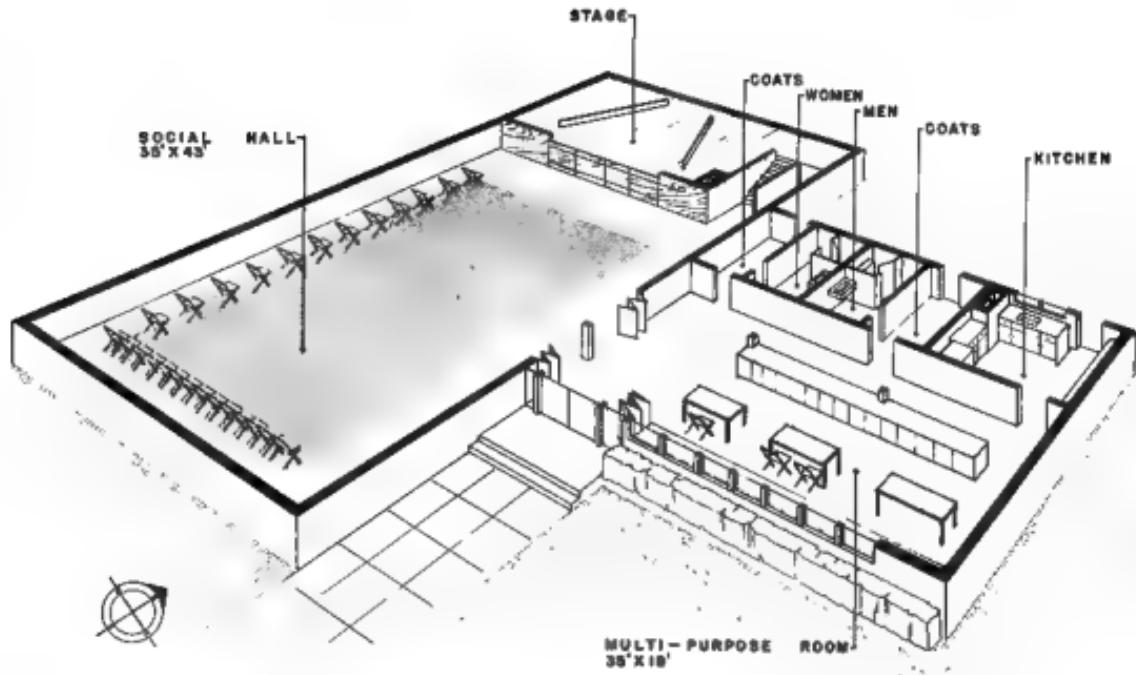
This plan is designed to meet the needs of a rural area. It has been planned to provide facilities for fifty families.

The social hall with its stage facilities will provide for events such as public meetings, lectures, plays and concerts, movies, dances, banquets and festivals. The social hall floor area is approximately 45 ft. by 35 ft., an area that is suited to sports such as badminton, boxing, volley-ball, ping-pong, calisthenics and gymnastics, but is not large enough for team sports such as basketball.

The smaller scale activities such as farmers' and businessmen's meetings, smaller club meetings, Sunday School classes, crafts and demonstrations may be held in the multi-purpose room. This area may also serve as a nursery while the larger hall is being used by the adults. The addition of a fireplace, together with appropriate furniture, would create a comfortable lounging area.

Provision has been made for the inclusion of lavatories, on the assumption that a septic system will be installed.

The multi-purpose room can be used as a canteen, being serviced directly from the adjoining kitchen. During large festive events, when the social hall is being used for a banquet, the multi-purpose room can be transformed into an extension of the kitchen to facilitate food preparation. The kitchen is placed at the end of the multi-purpose wing in anticipation of future expansion. When such expansion takes place, service to the new addition will be direct.



## AND THIS IS WHAT IT LOOKS LIKE



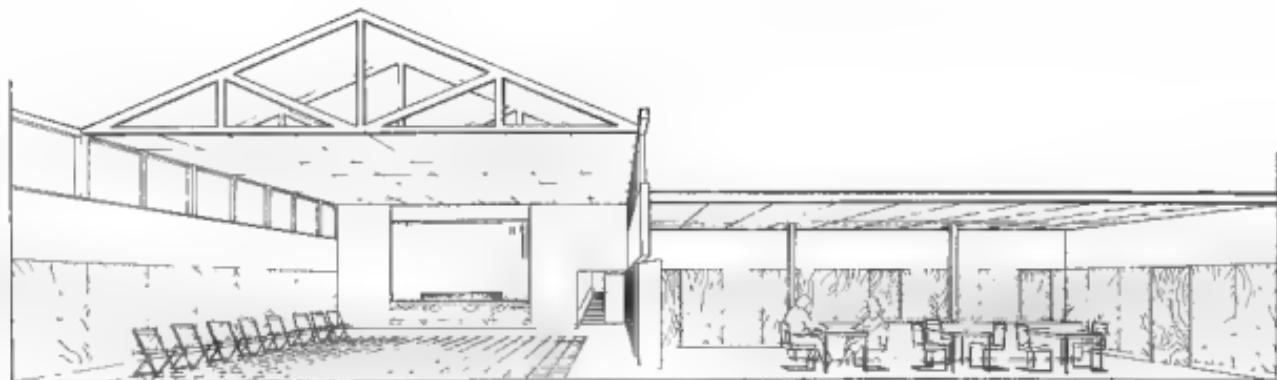
This view of the building indicates its type and function

The larger mass on the west with its wood truss roof and high windows is the auditorium. The addition on the east with its shed roof sloping to the rear and the band of windows on a southern exposure houses the multi-purpose room and service areas

The entrance is so located that the auditorium is to the left, and the multi-purpose room is to the right

The large windows on the front of the building provide adequate light for the lobby area and multi-purpose room. The fact that these windows are a combination of fixed and casement sash makes them useful for ventilating purposes as well

## THE HALL AND THE MULTI-PURPOSE ROOM



The cross-sectional view of this community centre shows clearly the relationship between the social hall and the multi-purpose room. The plan has been designed to be as open as possible so that during community banquets, dances, bazaars, etc., maximum space will be available. The inclusion of folding partitions has made it possible to close off certain areas in order to allow two separate and unrelated functions to be carried on simultaneously.

The high windows on either side of the auditorium provide excellent lighting and ventilation, and are not endangered when the hall is used for athletic activities.

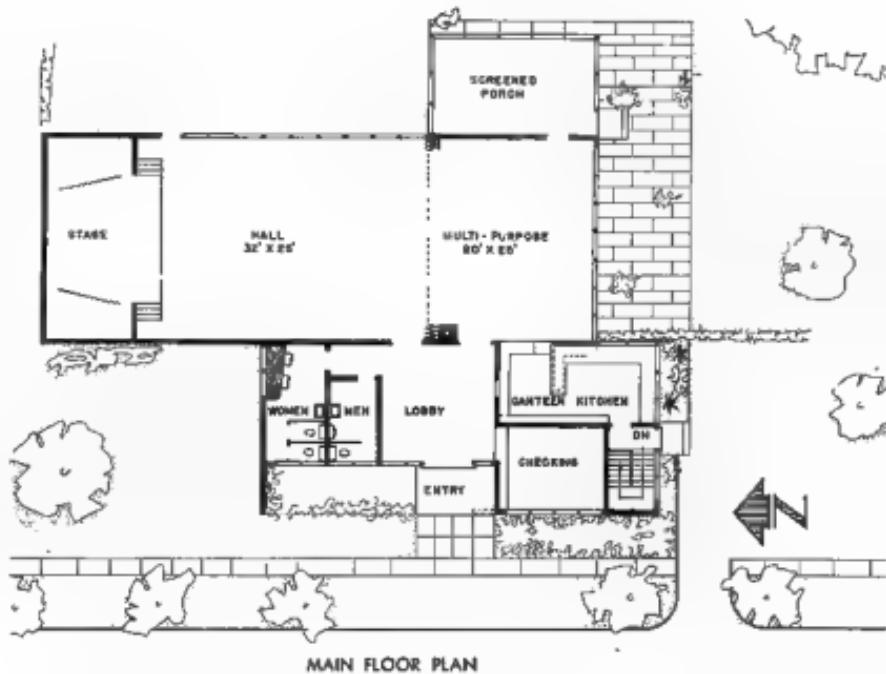
The plywood wall panels used in the auditorium and multi-purpose room have a distinctive wood grain and warmth of color. When combined with the smooth wall material above the paneling interesting contrasts of color and texture are formed. The panels are easily maintained and provide a durable finish for athletic and junior activities.

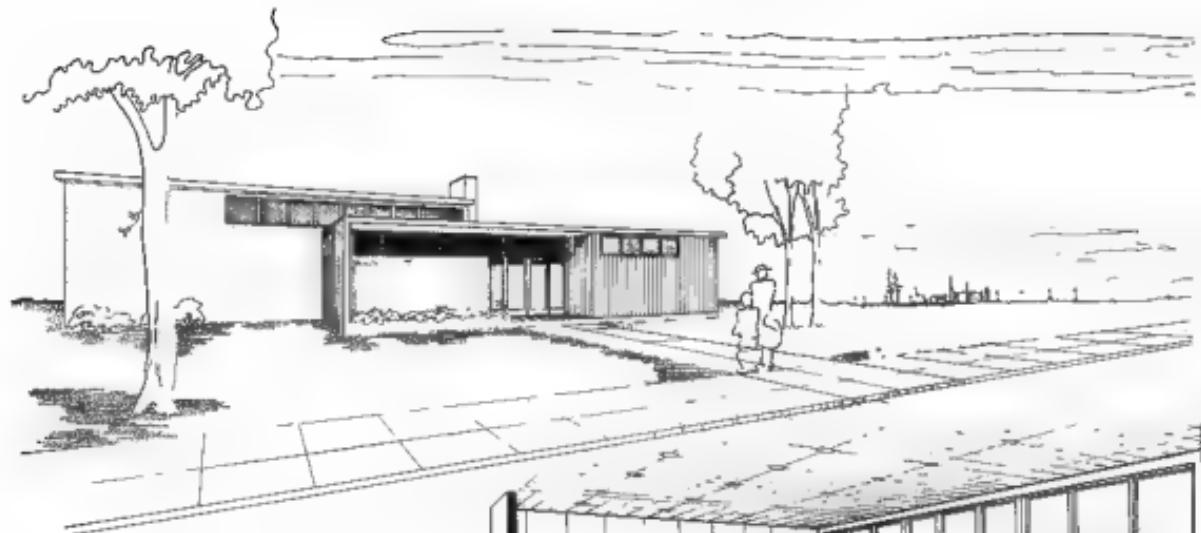
# HERE IS ANOTHER SMALL CENTRE SHOWING HOW THE MULTI-PURPOSE ROOM CAN BE USED FOR ADDITIONAL SEATING AREA

We have seen one way in which the hall and the multi-purpose room can be related. This plan shows another. The multi-purpose room is situated at one end of the main hall, and is separated from the hall by a folding partition. The inclusion of this partition makes it possible to use the multi-purpose room in conjunction with the hall as overflow space during popular events. The location of the multi-purpose room in relation to the hall makes for a continuity of seating arrangement, and also provides both areas with excellent views of the stage. There is direct access from the lobby to any area in the building. The ticket and checking office is located to the right of the lobby.

A kitchen-canteen is situated adjacent to the multi-purpose room and has an open counter serving directly to that area.

A porch, situated on the south-east corner of the building, opens from the multi-purpose room. The porch is screened on three sides, providing a maximum amount of vision and taking advantage of any cool summer breezes. This porch should serve as an ideal lounge area or games room during the summer months.





EXTERIOR PERSPECTIVE



INTERIOR PERSPECTIVE LOOKING TOWARDS MULTI-PURPOSE ROOM

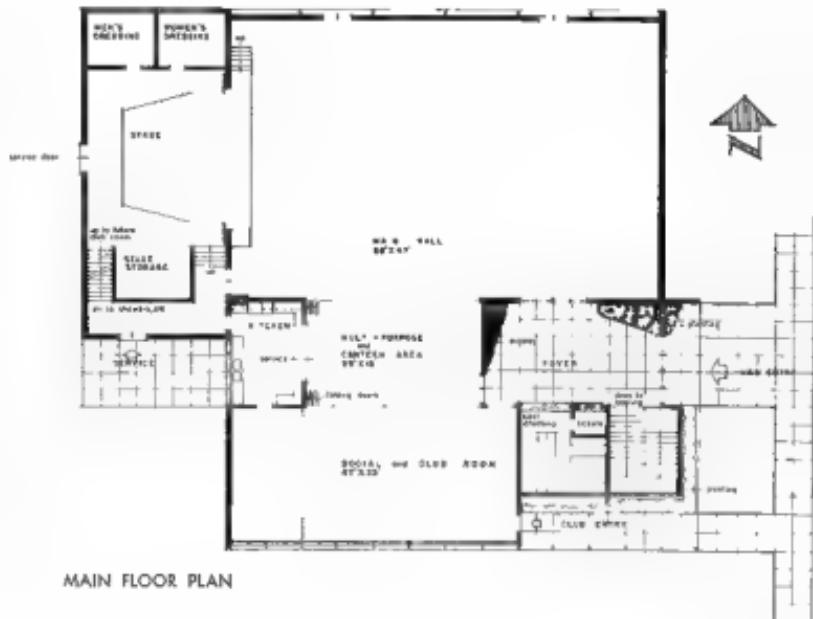
## AND STILL ANOTHER RELATIONSHIP BETWEEN MULTI-PURPOSE ROOM AND HALL

This plan is for a larger community and shows another arrangement of the multi-purpose and auditorium areas.

The multi-purpose room, placed near the entrance can be used as a lounge, meeting room, or as an area for exhibitions of photographs, paintings and the products of local talent. It is separated from the auditorium and from the club room by folding partitions. This arrangement allows the multi-purpose room to become an extension of either the club room or the auditorium, or allows the three rooms to become a single unit.

The club room, in addition to its relationship to the multi-purpose room and auditorium, has a partitioning screen of its own which can be used to divide it into two separate areas. This feature might prove useful in the case of club meetings where classes or informal discussions are held among the different age groups, or where two different subjects are being discussed.

The kitchen is located so that all the main areas of the building can be served without the necessity of passing through one area to reach another.



## MAIN FLOOR PLAN



EXTERIOR PERSPECTIVE

The exterior of the building is shown in the perspective above.

The interior view shows the flexible arrangement of the auditorium, multi-purpose room and club room. Note how the kitchen-canteen is readily accessible from the three main units.



INTERIOR PERSPECTIVE



## YOU MAY HAVE TO BUILD IN PROGRESSIVE STAGES

With intelligent planning it would be possible to add a unit to an existing building without detracting from the workability of the plan or from the appearance of the structure. Let's go back to the small rural community centre on pages 24 to 27.

The architects have planned this building so that it can be built in stages. Although this practice is not generally recommended, limited building funds sometimes make it necessary.

The main objection to building in stages is that, once the initial unit has been completed, it is quite often very difficult at a later date to create interest in further building.

### STAGE ONE

The choice of unit to be built first must be carefully considered. It is recommended in this instance that the social hall be built first for the following reasons:

- The social hall is the most important unit because it is the centre for the recreational, social and cultural activities of the community.

- The social hall basement plan calls for a kitchen as well as heating and fuel storage areas.

- The social hall is the "money-maker". It is more likely to pay for itself and thus aid in the building of future units.

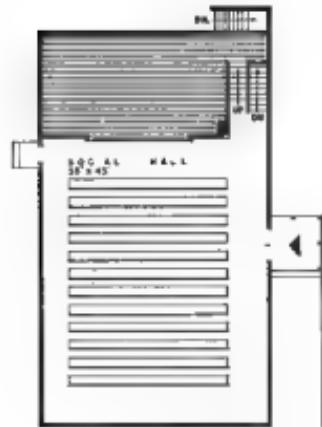
### STAGE TWO

The unit which forms the second stage was described earlier in this booklet. It consists of the social hall (Stage One) plus a multi-purpose room with auxiliary lavatories, coat rooms and kitchen.

### STAGE THREE

The third stage may consist of a school room, a clinic, a nursery, a kindergarten, a library, or even a curling rink if so desired. We show it as a curling rink addition as this ties in with the site layout on page 23.

# THE FIRST STAGE



MAIN FLOOR PLAN

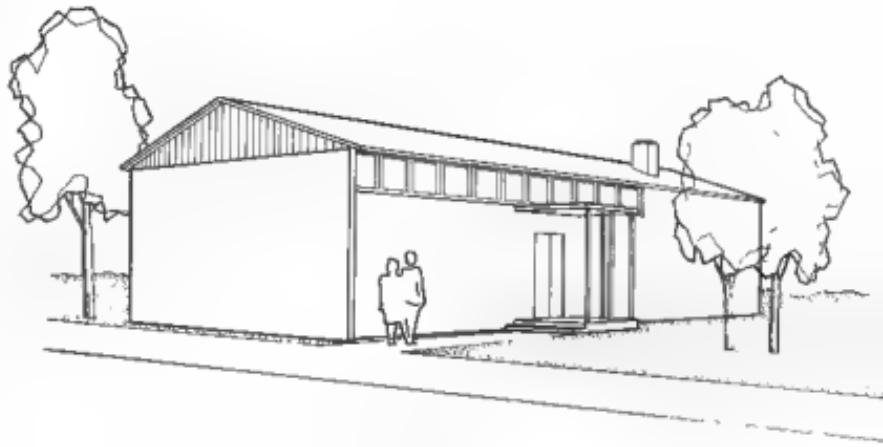


BASEMENT PLAN

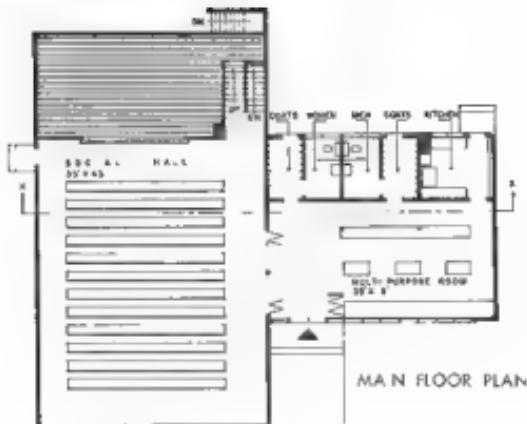
The main entrance to the social hall (First Stage) is located on the east, where the entry to the multi-purpose room will be. A small porch is added as a means of focussing attention upon the entrance.

The social hall has a seating capacity of one hundred and seventy-five and has stage and kitchen facilities. The kitchen is located in the basement area below the stage and direct service to the social hall is provided by sliding doors on the front face of the stage.

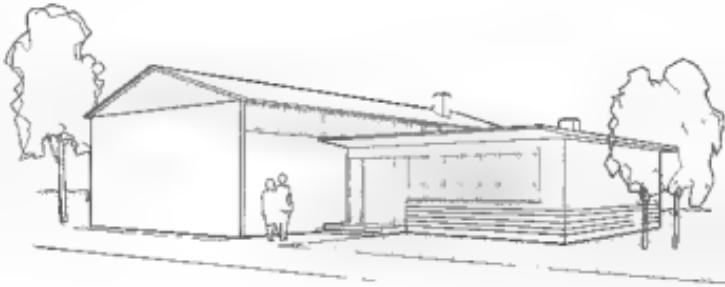
The heating room and fuel room are also located in the basement area.



## THE SECOND STAGE



The second stage has been discussed on previous pages. It consists of the addition of the multi-purpose room and auxiliary rooms. The entry porch has been removed from the social hall and the opening has become the entry to the multi-purpose room. The kitchen has been moved upstairs and the former kitchen area in the basement has become storage space. A part basement, containing a heating room and a fuel storage area, has been added. This fuel storage area is common to both heating units.



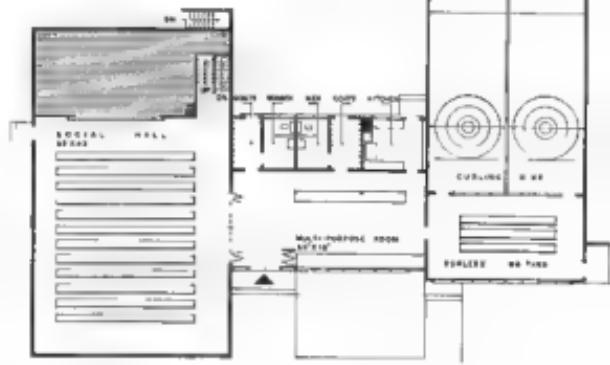
### THE THIRD STAGE: A CURLING RINK



The earthing link may be added to the existing structure without costly alterations.

The main entrance to the rink leads into a waiting area that is separated from the playing space by a glazed partition. An opening from the multi-purpose room also leads into this waiting area. This new unit or third stage can be indirectly served from the kitchen through the multi-purpose area.

If a skating rink is desired with this scheme it may be added as shown on the site layout page 23. The waiting area for the curling rink could then serve both the skaters and the curlers.



# THE SCHOOL AS THE THIRD STAGE

## PLAN ARRANGEMENT

The plan is laid out in such a way that there is no need for the general public to enter the classroom area of the building. During social events the classroom area can be closed off entirely, leaving the multi-purpose room and assembly hall open to the public. The entrance on the northeast corner of the classroom can be used as the main school entrance if desired. This would separate the circulation to and from the centre and school, if both areas were in use during the day.

The class areas can be entered from the multi-purpose room, thus giving the children access to the coat rooms, lavatories, kitchen and the recreational and cultural facilities.

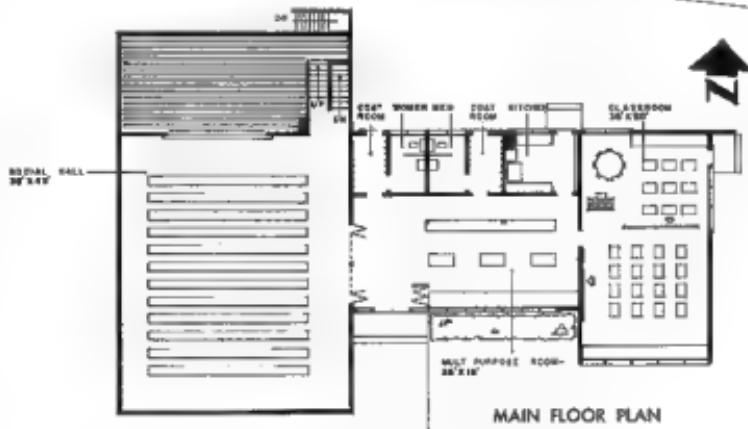
The school area is flexible in that the senior and junior grades are separated by a movable screen that acts as a chalk board. The classroom layouts are such that one teacher can supervise both units and attend to the smaller tots who are seated around a small table behind the teacher's desk.

Bookshelves and cupboard spaces are provided around the walls and under the windows.

Lighting and ventilation are prime considerations in any school. Note that the windows are so arranged that light to the classroom will come from the east and south exposure. This has proved to be the most desirable arrangement for classroom lighting. Desks are so arranged that the light source is to the left of the student in all cases. The kindergarten area and teacher's desk receive light from a north window. This is the most consistent source of natural light.

The furniture has been designed for the comfort of small people, that is, the scale of desks, chairs and tables has been kept in proportion to the size of the children who will use them.

If the multi-purpose room is used as an additional classroom, glazing of the separating partition is suggested. This will allow some degree of control from the main classroom.



MAIN FLOOR PLAN

# THE SCHOOL AND COMMUNITY CENTRE COMBINATION

## WHY

The school should be directly related to the community centre, even if it is not included as an integral part of a single building. There are many advantages gained by close association of adult and junior activities, including the following.

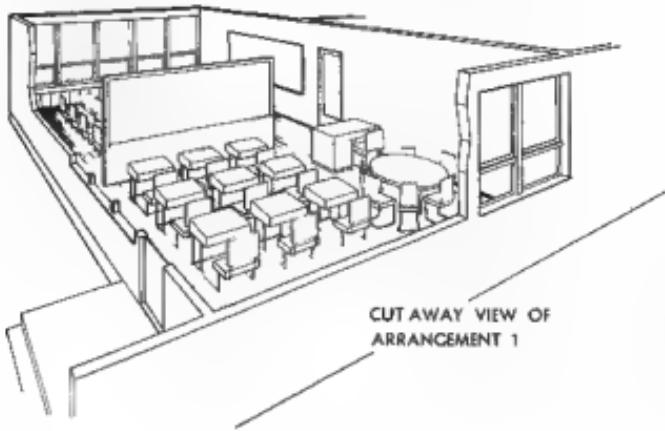
- A true centre is a 'community school' and this school should include parents as well as children. With such an arrangement, child education and adult education go hand in hand, ensuring a more complete personality growth for both child and adult.
- A close relation of community centre and school makes for a more harmonious union of academic activities with those that are cultural, social and recreational.
- The inclusion of the school as part of the community centre eliminates duplication of facilities and provides cheaper maintenance and fuel costs, thus effecting a saving for the community.
- The adult age group would benefit by being able to use the school library and school crafts equipment. Conversely, the school age group would benefit by obtaining a better stocked library and better crafts equipment than could be had without the extra financial aid.
- With proper control, rowdiness would be removed from such community affairs as dances, making these dances suitable entertainment for young people.
- The community centre offers space for exhibitions of school work.

## WHY NOT:

The probable disadvantages which might result from a school becoming part of a community centre are few and are directly related to the behavior of the people.

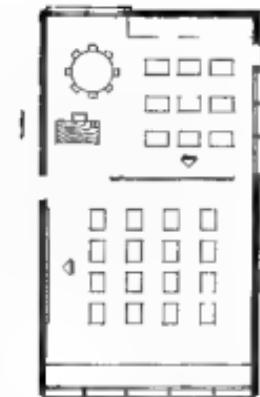
- The problems of building supervision and maintenance could be complicated under any organization that was not functioning in complete harmony. A similar cause for disunity could be the distribution of maintenance costs between the school board and community centre.
- Some people are of the opinion that dances and other forms of entertainment should not be associated with education.
- There is a possibility of damage to school property.
- It is the opinion of some adults that adult social activity should not be associated with junior activity.

# THE CLASSROOM CAN BE ARRANGED IN VARIOUS WAYS



The classroom arrangements illustrated on these pages are governed by availability of natural light, location of entrances and the size of the area.

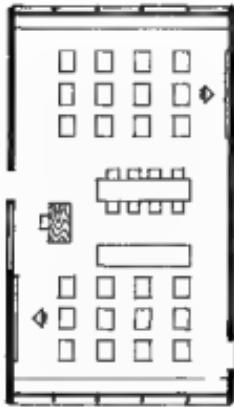
The perspective above is based on the plan shown at right. Because no solid partitions have been used, the area has maximum flexibility. The large glass areas and the desk locations ensure that adequate natural light will be provided for every student. Maximum control of the younger students is achieved by the location of the teacher's desk.



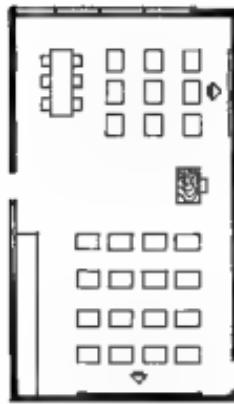
This plan has already been discussed and is suggested as being the best of the illustrated arrangements for the schoolroom. The important elements of light, view, control, traffic, privacy and exit have been carefully considered.

Ample cupboard storage is provided, with the largest space situated near the senior students.

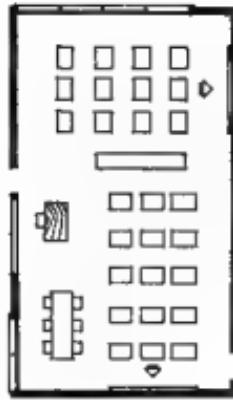
The blackboards are conveniently located close to the teacher's desk and to each other.



ARRANGEMENT 2



ARRANGEMENT 3



ARRANGEMENT 4

In this arrangement, the blackboard partition has been replaced by a low storage counter thus affording the teacher complete control over all pupils, and over both entrances. However, a more awkward route between the blackboards result from this change.

The teacher loses some control in this unit due to the kindergarten being furthest from the teacher's desk and to the distance of the desk from the entrance.

The classes are divided by space only, lacking even the low counter of the second arrangement. Cupboard space is small, and it is assumed that physics and chemistry experiments will be conducted in the multi-purpose room, where ample space is available.

This plan allows better over-all control, but adequate storage space is lacking.

Where possible, north and east light is provided. However, it was necessary to include a west window to give proper natural light to the kindergarten area. This window might cause some discomfort to the students in this area due to glare.

## HERE IS AN ENGLISH EXAMPLE: THE ELEMENTARY SCHOOL IS COMBINED WITH THE CENTRE

Much of the following text was taken from "The Design of Nursery and Elementary Schools" by H. Myles Wright and R. Gardner-Medwin (page 113).

Impington Village College, serving Histon and seven of the Cambridgeshire villages, was designed by architects Walter Gropius and Maxwell Fry to provide for the cultural and social life of the youths and adults of the community. The school serves two hundred and forty boys and girls who formerly received very limited education in small all-age parochial schools.

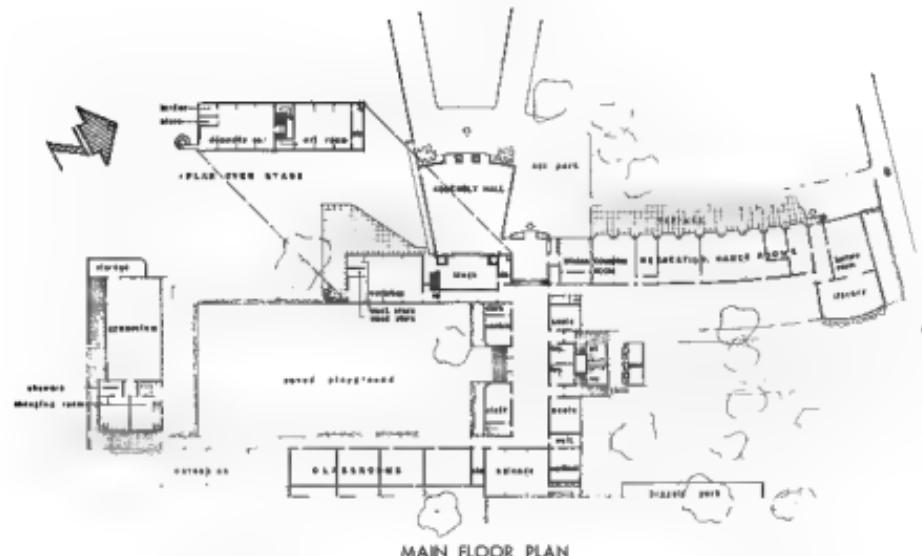
The wing on the right of the assembly hall is used mainly for adult education, which includes handicrafts, agriculture, physical training, and university extension courses in the arts and sciences.

The "promenade" separates the classroom and laboratory areas from the adult section. This adult section is also expected to serve the younger people, providing them with assembly hall, workshops, lecture theatres and recreational facilities. The promenade is a main artery connecting all parts of the building. Because it is central, cloakrooms, lavatories and offices are immediately adjacent to it.

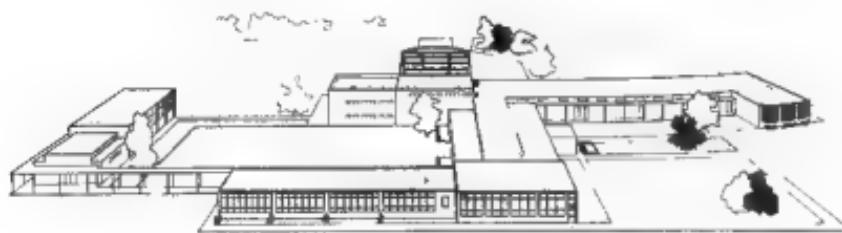
Each classroom is a self functioning unit entered from a covered walkway. Light and air are provided from both sides of each room, making natural lighting conditions ideal, and providing a maximum of natural ventilation. The fact that all units open to the central paved play area makes it possible to hold classes out-of-doors. The arrangement of classrooms allows for easy and economical expansion of the school wing.

Many examples of similar types are found in Finland, Sweden, Norway, Switzerland and the northern United States. With modifications, similar planning methods can be used to advantage in Canada. A plan such as this would present heating problems and in all probability, would require a more expensive heating system than the conventionally planned building. However, the advantages gained by such open planning should far outweigh the disadvantage of the extra heating costs.

## A SIMILAR IDEA WOULD BE APPLICABLE IN THIS COUNTRY



### MAIN FLOOR PLAN



## AERIAL PERSPECTIVE

Reproduced with the kind permission of Walter Gropius, Architect.

## HERE IS ANOTHER SCHOOL AND CENTRE COMBINATION

This project owes a great deal of its success to the cooperative endeavours of the various social and recreational clubs and to the school board of this particular community. Instead of each organization attempting to house its own activities independently, a combined effort was made, resulting in a far more adequate project and one which otherwise would have been financially impossible.

Farsightedness on the part of recreational groups resulted in the establishment of an area to be used exclusively as a community centre site. The high school and playground is situated to the north of the proposed school, to the east is a sizable area for softball and hardball, and to the south are the curling and skating rinks. Such integrated planning has resulted in a logical solution of this town's social and recreational problems.

The building is basically a vocational school with facilities for a varied range of training, including wood-working, stenography and domestic science. Provision has also been made for recreational and social activities. The building includes a large auditorium with complete stage facilities. The auditorium floor is large enough for basketball and badminton courts. Four bowling alleys are located in the basement and are easily accessible from the main lobby. A small canteen in conjunction with these alleys provides service for approximately twenty persons.

THIS TIME IT IS A TRADES SCHOOL

MAIN ENTRANCE

PERSPECTIVE FROM NORTHWEST

## AND THIS IS HOW THE PLAN FUNCTIONS

The lobby provides direct access to the auditorium, gymnasium and basement, where the bowling alleys are located. The principal and receptionist occupy a joint office which is situated to the right of the lobby. The corridor of the main classroom wing leads directly from the lobby. The domestic science wing and locker areas branch off the main corridor. Coatrooms are provided off the lobby. Space has also been provided for a bulletin board and trophy display case.

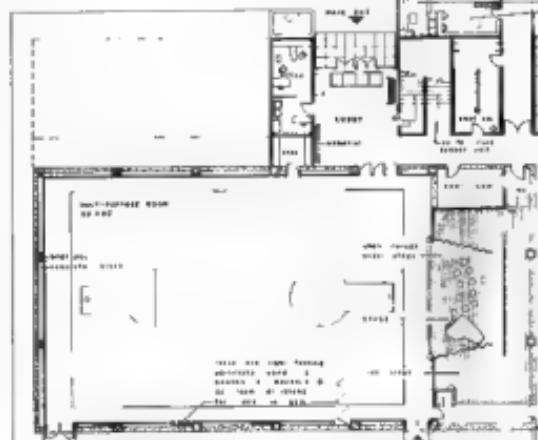
The auditorium has a seating capacity of approximately four hundred people. It has complete stage facilities with direct access to men's and women's shower areas which are located to the rear of the stage. The floor is large enough to provide a regulation basketball court or two badminton courts. Folding partitions are placed at column intervals to create a series of smaller areas that may be used during bazaars or similar functions.

The domestic science wing consists of areas for instruction in cooking, sewing and other domestic activities. At the extreme end of the wing, two complete kitchen units are set up. The sewing centre is quite large, with adequate space for about twenty people. An adjoining fitting room is provided. At the south end of this wing a comfortable living or lounge area is located, complete with reading room.

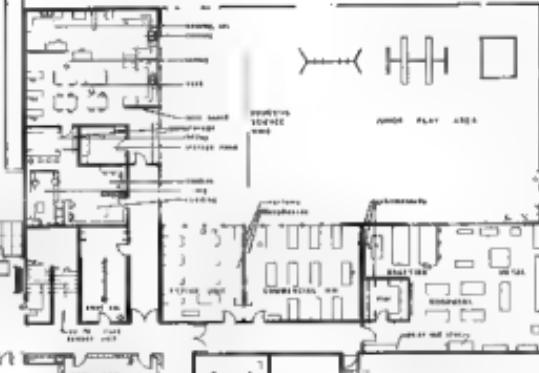
In the main wing the wood-working and sheet metal shop is housed along with the commercial course rooms. The shop has facilities for most types of sheet metal work and wood-work with adequate space for drafting and designing. The commercial classroom provides seating for twenty to thirty students, and the adjoining typing room accommodates approximately fifteen.

The service area is located behind the stage and contains men's and women's locker areas, complete with showers, drying rooms and lavatories. This unit is close to the gymnasium and provides easy access to the outdoor playing fields.

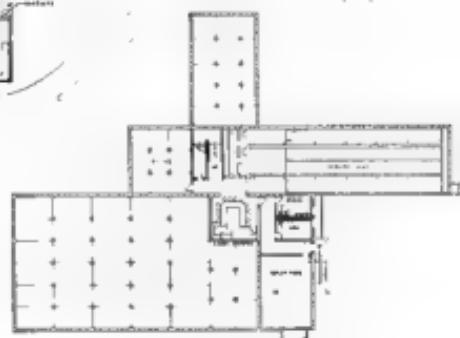
The basement includes four bowling alleys with a sizable gallery. A snack bar is conveniently located nearby. Lavatories are situated adjacent to this area. The heating room is also situated in the basement and has a separate stairway exit.



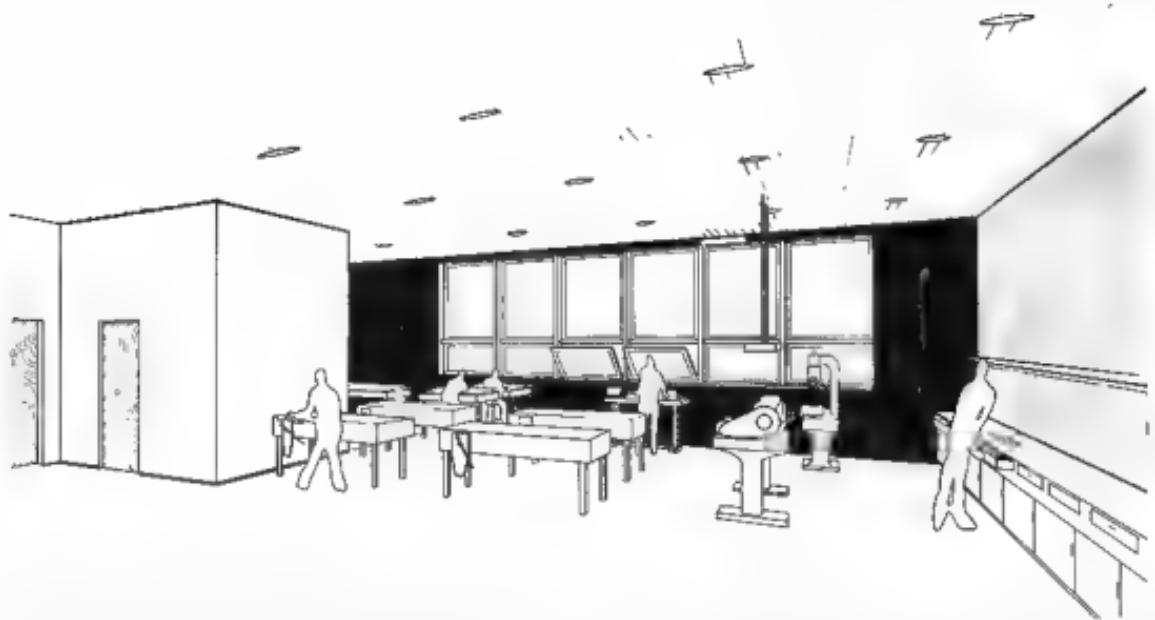
MAIN FLOOR PLAN



SECOND FLOOR PLAN



# THIS IS THE METAL AND WOOD-WORKING SHOP



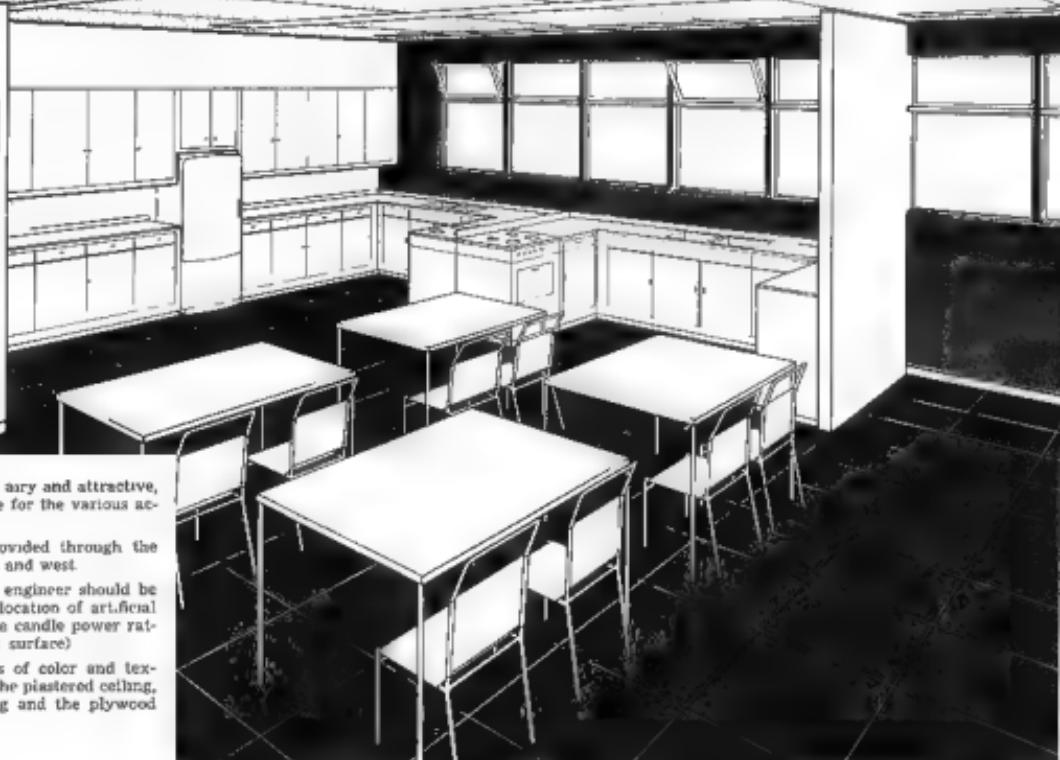
Storage cupboards along the walls have bench or counter tops which provide more working space. Tables, benches, lathes, etc. are in the centre of the room and are so arranged as to give maximum work space. A storage room is provided for tools and other valuable items. The instructor's desk and the designing tables are located apart from the main working area.

Heavy duty flooring and wall surfaces that are easy to clean have been used in this workshop.

Lighting is an important feature of any classroom or workshop and is achieved by natural or artificial means or by a combination of both.

In this workshop, natural bi-lateral lighting is achieved through windows on the north and south. This natural light is supplemented with artificial light obtained from spotlights located in the ceiling. For close work such as work on a lathe, special lighting fixtures have been provided. With the exception of these special fixtures, all artificial lights have been designed as an integral part of the room and are functional rather than decorative.

## AND THIS IS THE HOMEMAKERS' ROOM



This room is bright, airy and attractive, with plenty of space for the various activities.

Natural light is provided through the windows on the east and west.

A qualified lighting engineer should be consulted as to the location of artificial light sources and the candle power ratings (at each work surface).

Interesting contrasts of color and texture are formed by the plastered ceiling, the recessed lighting and the plywood panelled walls.

# COMMUNITY CENTRE WITH MUNICIPAL OFFICES

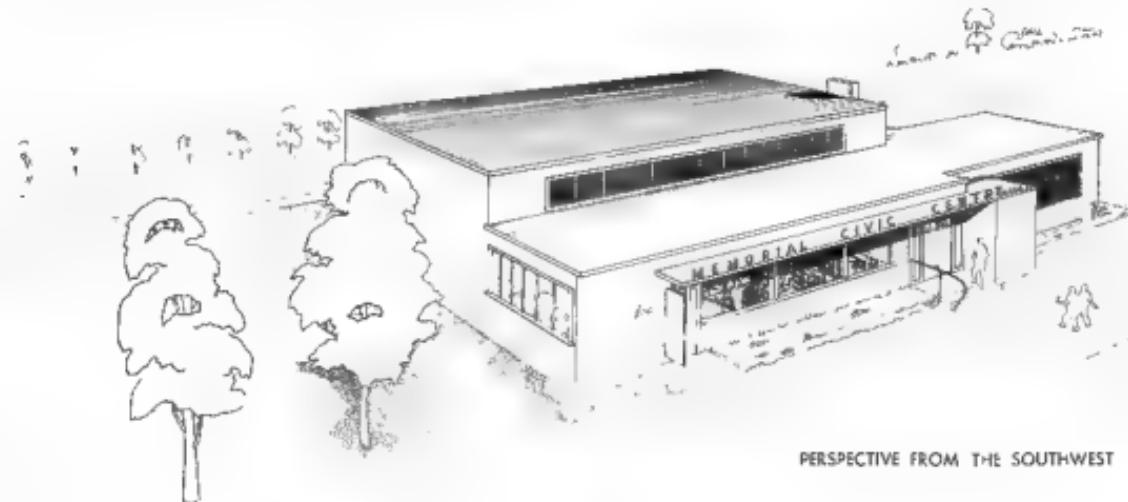
The inclusion of municipal offices in a community centre is logical as it combines community administration, recreation and culture in a single unit.

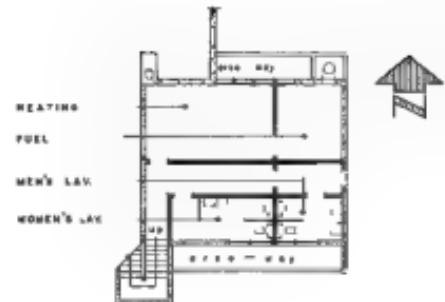
Such a civic centre is a sound investment since it will get financial support from the municipal government as well as from the various social and recreational groups involved.

Another advantage gained by such an arrangement is the avoidance of the duplication of building and maintenance costs. It seems more logical to pool the resources of the various activity groups in a community into a concerted effort to construct a worthwhile building than to have each group trying vainly to finance its own facilities.

Another advantage is the supervision that will be made available. When a centre is used solely for social and recreational activities, it is usually unoccupied during the day. If town offices are included in the structure, then round-the-clock occupation is assured. This enables constant building supervision. If a schedule or program of activities is drawn up, it may be possible to have one of the municipal staff appointed to administer it.

It should be mentioned here that, although the municipal offices and recreational areas are combined under one roof, it does not mean that they will interfere with one another. The plan should be so arranged that each area functions independently of the other.





This memorial civic centre has a tidy and attractive appearance, free from superfluous adornment. The massing is very simple and the plan arrangement is such that construction costs would be kept to a minimum.

The civic offices are located in the front portion of the building, taking full advantage of a large southern exposure. A protective canopy is carried over the office windows and also over the entrance.

The higher mass to the rear is the social hall or auditorium, and the wing to the right consists of the multi-purpose room and kitchen.

The civic offices are located to the left of the entrance lobby and include a waiting area, receptionist's office and a town clerk's office. A vault has been included in the receptionist's room in proximity to the clerk's office.

The social hall is directly opposite the entrance and has a seating capacity of approximately two hundred. It is provided with good stage facilities and large, convenient dressing rooms. The kitchen is located at the east end of the hall and provides easy over-counter service directly to the hall. A good sized storage room is also located at the eastern end of the social hall.

The multi-purpose room is located to the right of the entrance lobby. This area also has over-counter service from the kitchen. A folding partition between this room and the social hall makes it possible to combine the two units in the event of functions that demand a larger area.

Lavatory facilities are located directly downstairs from the lobby. The heating and fuel rooms are also located in this basement area.

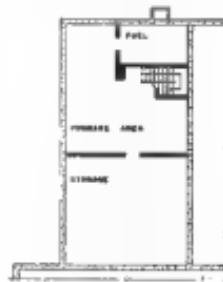
# ANOTHER CENTRE WITH CIVIC OFFICES



MAIN FLOOR PLAN



SECOND FLOOR PLAN



BASEMENT PLAN

This is another community centre containing municipal offices.

The auditorium, with full stage facilities and dressing rooms, has a seating capacity of approximately four hundred. The floor surface is large enough for a basketball court and, if desired, badminton courts can be laid out on the same area. A projection room, located on the second floor, provides the necessary facilities for movies. This projection room should be of fireproof construction as prescribed in local codes.

The banquet hall is situated at the end of the auditorium and is directly accessible from the lobby. The inclusion of the folding partition makes it possible to combine the banquet hall and auditorium during occasions when the crowd becomes too large for the main hall. Direct kitchen services to this banquet area are available.

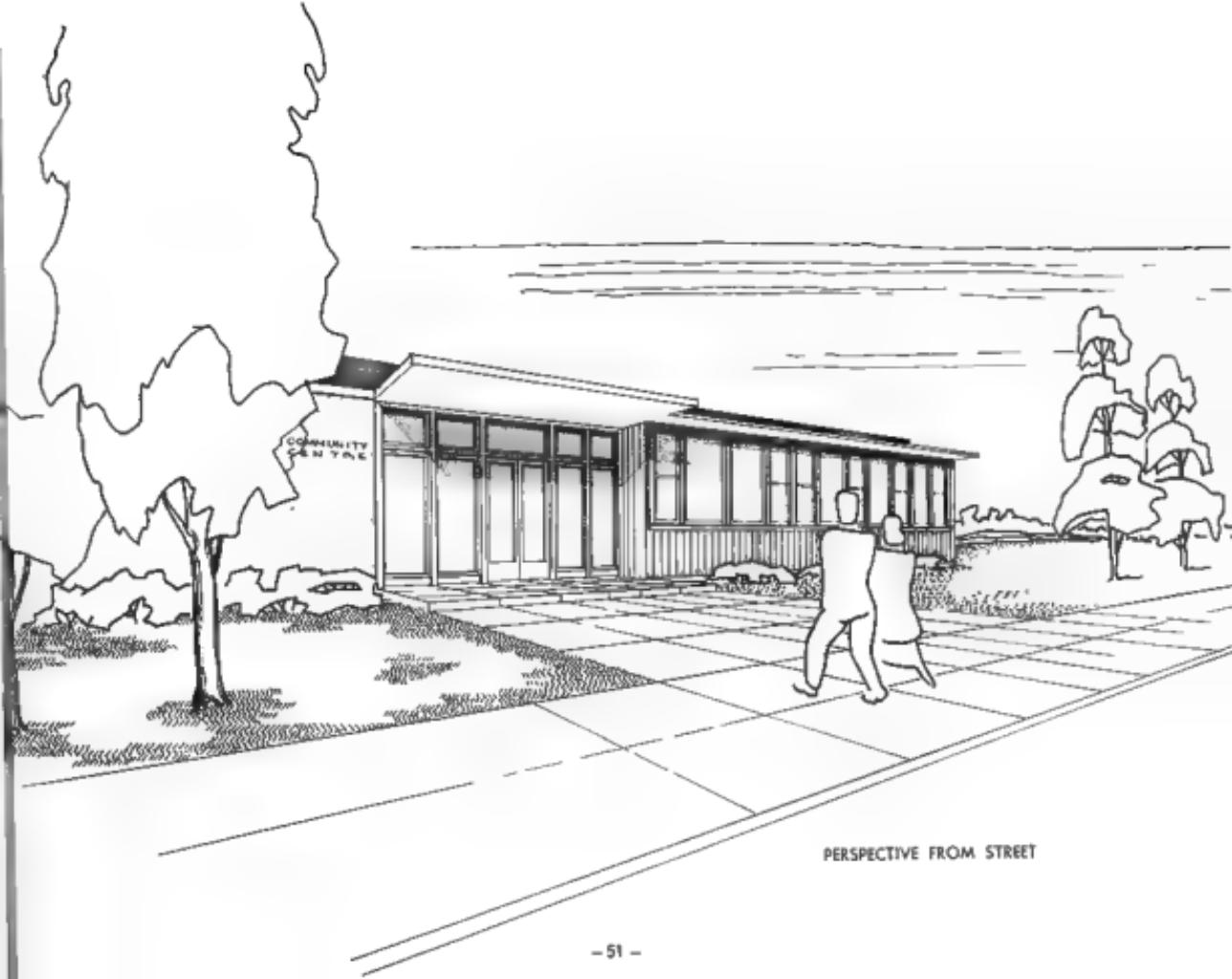
The municipal group, consisting of a clerk's office and a council room, is directly off the lobby. If the council room is to be used for club meetings, etc., provision has been made whereby the public can bypass the clerk's office through a corridor connecting the council room to the lobby.

The coat-checking room, ticket office and lavatories are conveniently situated off the main lobby.

A janitor's suite is located on the second floor. This suite has a living-dining area, kitchen, two bedrooms and a bathroom. A private staircase connects with the service entrance on the main floor.

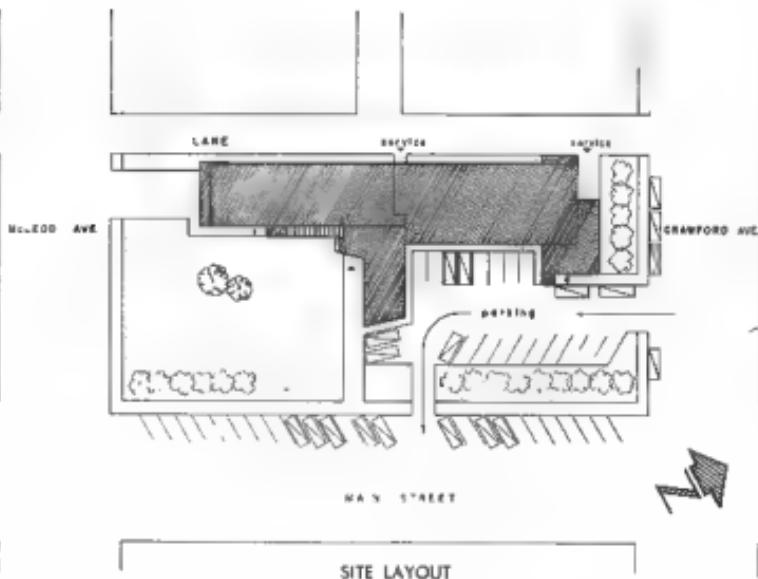
Provision has been made for a future extension to be used as a fire hall. If and when this fire hall is built, it will be possible to use the basement area below it as a cistern.

An exterior view of the building is shown on the opposite page.



PERSPECTIVE FROM STREET

# HERE IS A LARGER CENTRE INCLUDING A TOWN HALL AND A LIBRARY: IT CAN BE BUILT IN STAGES



Designed for a town of approximately four thousand people, this civic centre is a unique example in that it houses more varied community activities than any other centre shown in this booklet.

The building is to be located on the site of an existing landscaped park, situated in the central section of the town. Adequate space is available immediately adjacent to the building for parking approximately fifty automobiles. This eliminates the usual inconveniences created when no parking area is provided.

The building houses the municipal administration offices, including the mayor's office, superintendent and town clerk's office, town office and council chamber.

Recreational and social areas included in the building are: an auditorium, banquet hall, legion lounge, teen canteen and a library. Also incorporated into this civic centre is a two-truck fire hall and a suite of rooms for the fire chief and his family.

Planning has been done in such a manner that the building can be erected in three stages as follows:

#### Stage One

- Entrance lobby
- Town office
- Fire hall
- Legion lounge
- Council chamber
- Fire chief's living quarters
- Boiler room
- Record storage room

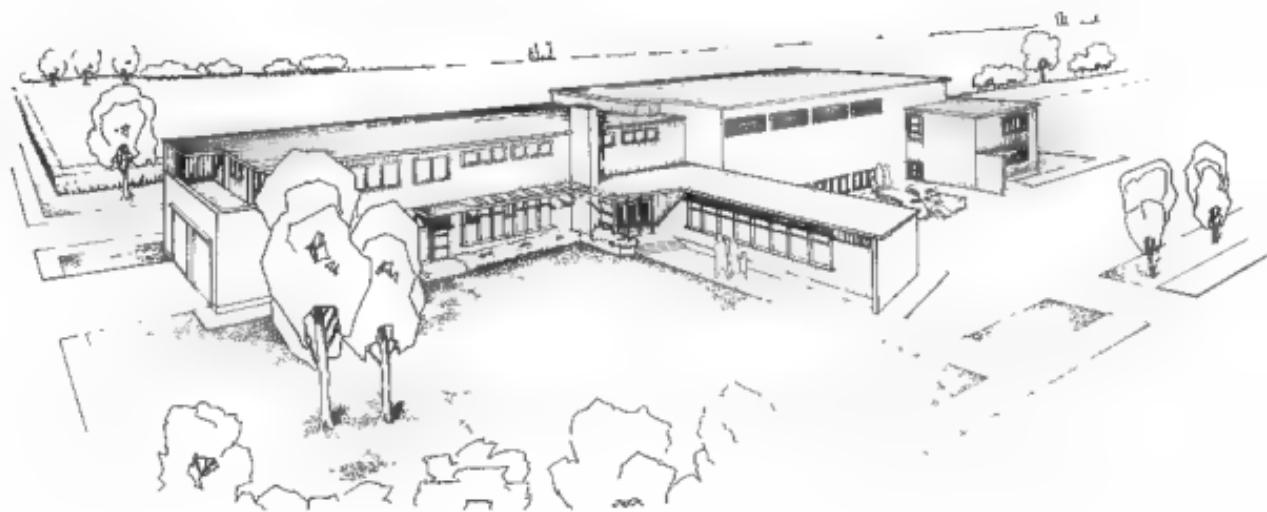
#### Stage Two

- Main auditorium
- Main banquet room
- Stage, with workshop and dressing rooms
- Teen canteen

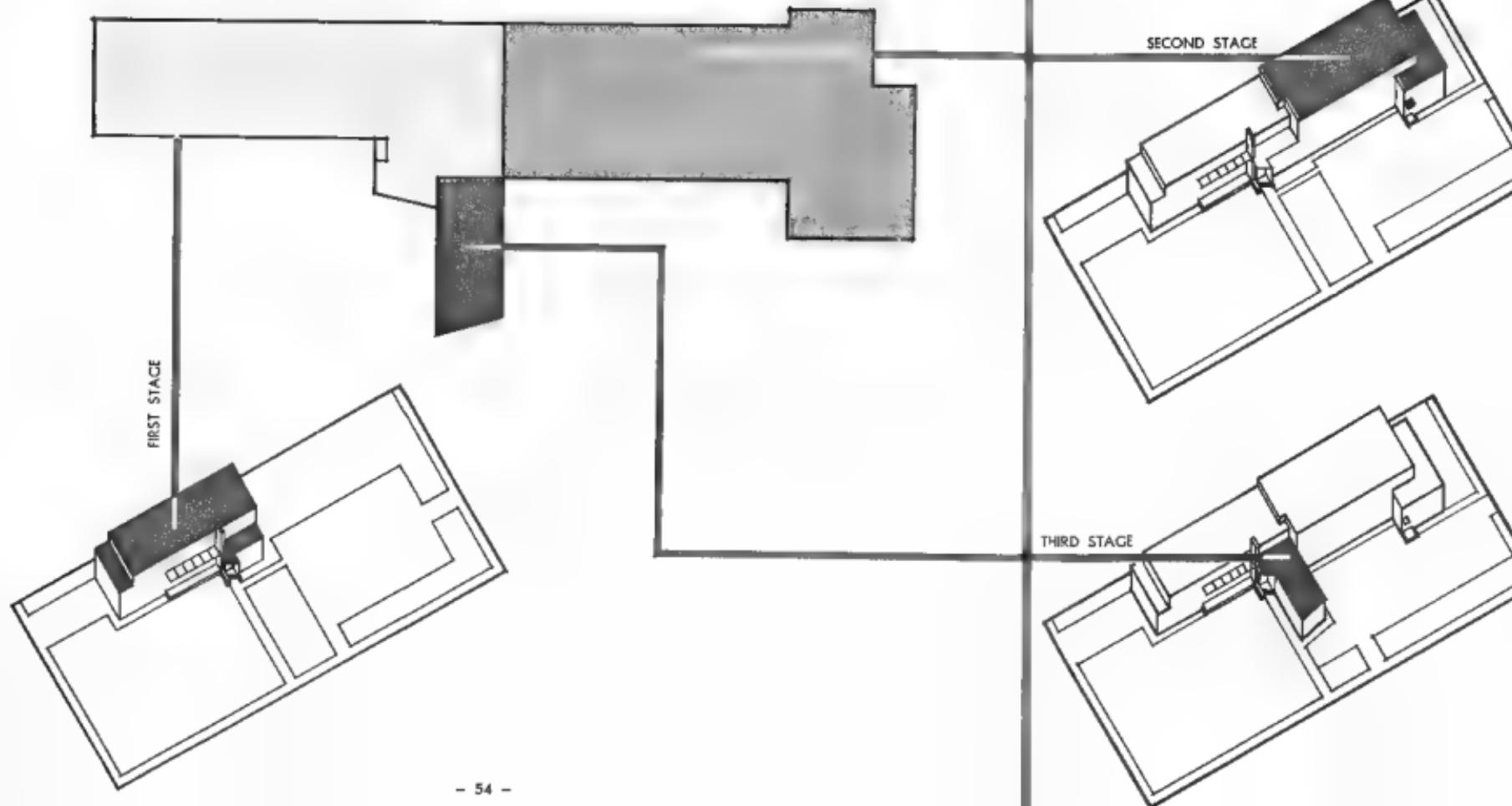
#### Stage Three

- Library

# THE COMPLETE BUILDING



AERIAL PERSPECTIVE



## STAGES OF CONSTRUCTION

Frequently it is wise to plan public buildings so that additions can be made. Such planning will enable a community, by building in stages, to keep well within its financial limitations. At the same time, it will assure that each stage, since it was preplanned as an integral part of the whole Centre, will conform to the style and manner of construction of preceding stages.

The Centre shown on this page can easily be erected in stages. The drawings illustrate the various stages and how they are combined to form the final structure.

# AND ITS PLANS



MAIN FLOOR PLAN

These pages show the plans and the longitudinal cross-section of the completed building.

From the entrance lobby, access is provided to the town office, library, reading room, council chamber, banqueting room and main auditorium. In a wing situated to the right of the entrance is the Library which includes the librarian's desk, her work area, store-room and book-stack space.

A small ticket booth is situated directly to the right of the vestibule. This booth is large enough to serve also as the headquarters of the building superintendent.

Immediately adjacent to the main lobby is the municipal office containing a public waiting area, room for four stenographers and three private offices for the mayor, town clerk and the superintendent.

A coat checking room opens directly on to the lobby. This room should be large enough to take care of the checking of garments when functions are held in the auditorium or banqueting hall or in both.

A short flight of stairs leads from the lobby up to the main auditorium where provision has been made to seat approximately four hundred people. A movable snack bar has been indicated which could be installed when occasion demands.

The stage area has been planned for multi-use and the dressing rooms can be approached directly from the outside by means of a private entrance. These rooms could also be used for club meetings, etc. Beneath the stage there is sufficient storage space for the auditorium chairs.

The main stairway provides access to the legion lounge and the council chamber on the second floor. The former has an adjoining canteen which is serviced directly from the rear service entrance.

The council chamber is large enough to allow seating for approximately forty spectators and could be used when necessary for club meetings, board of trade meetings, etc.

The fire hall is located at the south end of the building. A staircase connects it directly with the fire chief's suite on the second floor, this suite being large enough for a family of four.

The banquet hall is situated in the basement area, one half a flight down from the entrance lobby. The area is large enough to seat a maximum of two hundred and fifty people, and has adequate kitchen facilities.

A teen-agers canteen is located at the far end of the banquet hall and is accessible from the hall and from the outside.

The cross-section, taken lengthwise through the centre of the building gives a picture of the vertical relationship of the areas and various levels of the building. The main auditorium floor level was raised high enough above grade line to allow sufficient window area in the banquet room below. The ceiling level of the fire hall was raised to make better use of vertical space and still allow a uniform roof level.



SECOND FLOOR PLAN

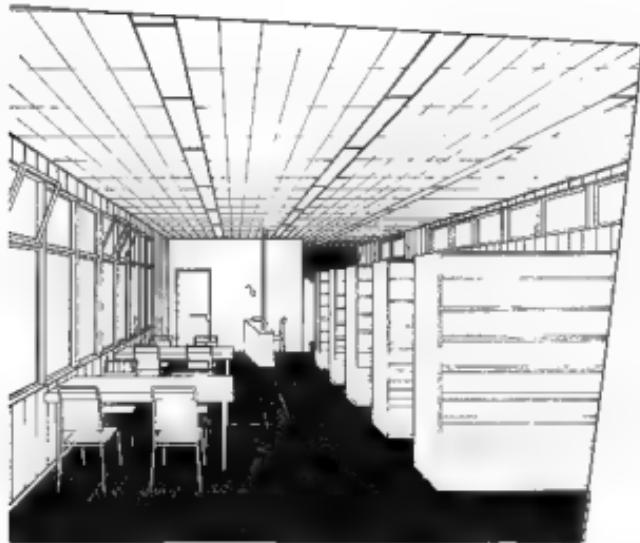


BASEMENT PLAN



LONGITUDINAL SECTION X-X

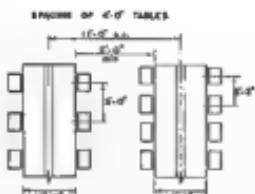
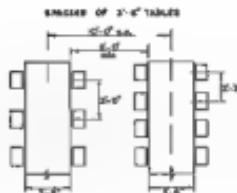
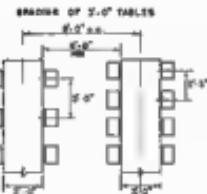
## STAGE THREE: THE LIBRARY



Here is a perspective view of the library in the civic centre. It was previously noted that the library is adjacent to the entrance lobby. This view illustrates the control that the librarian has over people entering and leaving the room.

An attempt was made by the architect to create a cheerful and inviting area—an area that would encourage leisurely reading, and subsequently popularize the library idea.

Bi-lateral lighting is supplied by the large windows on the south and the clerestory windows on the north. The clerestory windows supply light to the book stacks or shelves to the right. Artificial illumination is supplied by lighting troughs recessed in the ceiling.



LIBRARY SEATING

# SOME NOTES ON LIBRARY PLANNING

The library should be located as near as possible to the main entrance lobby. It should have only one public entrance, and the librarian should have complete control of this entrance and every part of the library from her desk.

It should be located in a quiet section of the building. The floor should be of a resilient material such as cork, linoleum or rubber tile. Walls should be surfaced with hard-finished plaster. The ceiling should be treated with some acoustic material.

Windows should be placed high and wall areas should be used for storage as well as lighting. A bi-lateral arrangement of windows should be used when possible.

Well diffused general illumination should be provided for the entire area. Standard study and reading lamps may be supplied for the tables along with other special units for lighting the shelves.

## HERE ARE SOME LIBRARY PLANNING STANDARDS

- One linear foot of shelving holds six books.
- Shelves should be supported every three feet.
- Shelves should be a minimum of eight inches deep, with at least ten inches between them.
- Shelves for adults should be a maximum of seven feet high, containing seven rows.
- Shelves for children should be a maximum of five feet high, containing five rows.
- The bottom shelf should be four to six inches off the floor.
- Library tables are thirty-six inches across, with thirty inches allowed for each reader.
- Tables should be spaced sixty inches apart.

## A SUGGESTED FORMULA FOR COMPUTING THE SIZE OF A READING ROOM

- The number of books should be based on the population of the community. A library should contain three books per capita or not less than six hundred volumes.
- One square foot of library space houses ten volumes.
- One seat requires forty square feet.
- One square foot is sufficient for forty volumes circulated per year.

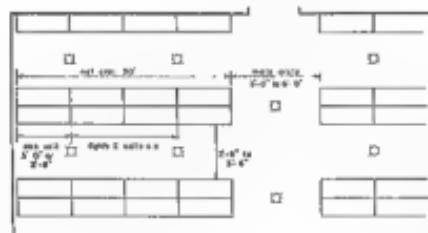
$$\text{Area of library in square feet} = \frac{\text{Volumes}}{10} + \frac{\text{Seats} \times 40}{40}$$



SIZE FOR REGULAR BOOKS      SIZE FOR REGULAR AND CHILDREN'S BOOKS

SIZE OF BOOKS	VOLUME PER FT. OF SHELF	FT.
PICTURE	10	8'
GENERAL LITERATURE	9	8'
HISTORY	8	8'
PUBLIC DOCUMENTS	9	8'
REFERENCE	9	8'
TECHNICAL	7	8'
SCIENTIFIC PERIODICALS	800	8'

LIBRARY STACKS



# COMMUNITY CENTRE WITH HEALTH CLINIC

We have seen the advantages gained by locating schools, municipal offices, cultural and recreational clubs in one building. The inclusion of an area for a clinic where community members can receive medical and dental examinations and treatment, is an advanced step in community planning.

Many small towns do not have a resident doctor or dentist, but are visited weekly by a district doctor whose headquarters are located in a larger town nearby. Usually no provision is made in these smaller towns for proper medical attention. For example, it is a frequent practice to set aside a room in the general store to be used as a medical station. If a clinic were included in the community centre, such makeshift quarters would not be necessary. Adequate facilities, in a central location, would be made available to all residents of the community.

The project illustrated on these pages combines the facilities of a community centre and clinic into a very flexible unit with a variety of uses.

From the spacious, well-lighted lobby there is direct access to the auditorium, multi-purpose room and clinic area. The checkroom and lavatory facilities are conveniently located directly off the lobby.

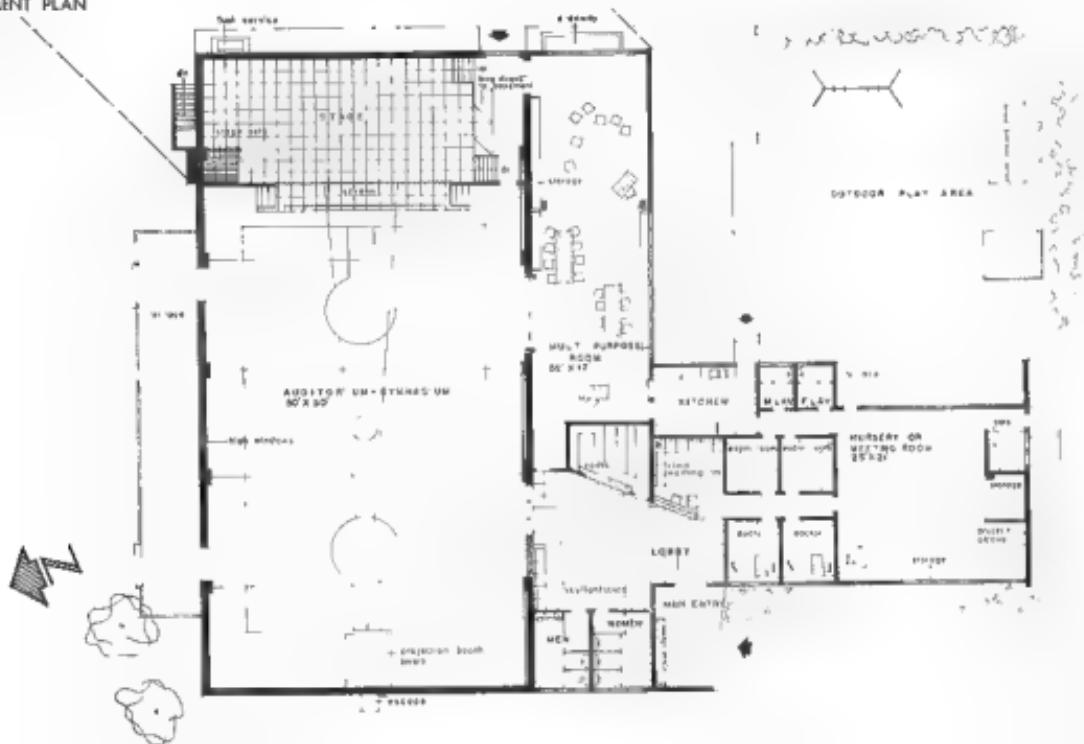
The clinic has a receptionist's office with waiting area for approximately ten people. This waiting area is located directly opposite, and in full view of, the entrance doors. Two doctors' offices and two examination rooms are in proximity to both the waiting area and the nursery. The nursery is a large, pleasant room with a glazed east wall opening to an outdoor play terrace. The terrace is a well sheltered area, completely set apart from any adult activity area.

If and when it is not in use as a clinic area, the nursery could serve as a meeting room. The auditorium has a seating capacity of approximately three hundred. It has adequate stage facilities, with the dressing rooms located in the under-stage basement area.

The multi-purpose room is situated adjacent to the auditorium and is separated from it by a movable partition. This makes possible the combined use of the auditorium and the multi-purpose room during events that demand larger floor space. A movable partition has also been provided in the multi-purpose room making it a flexible unit which can be used as two smaller meeting areas.

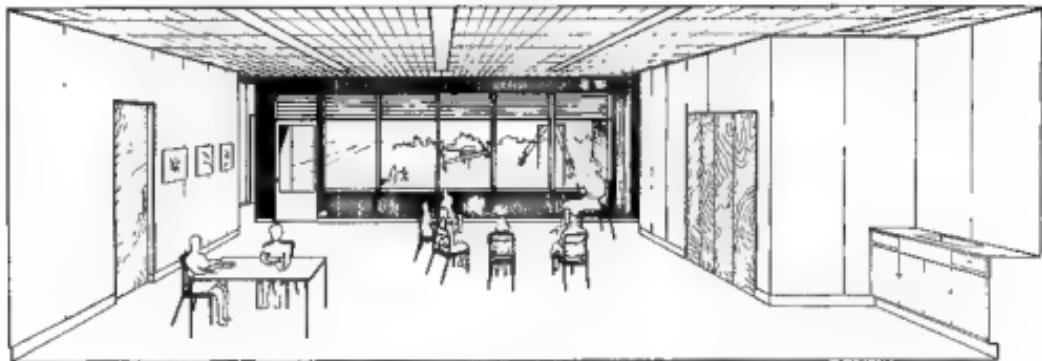


BASEMENT PLAN



### MAIN FLOOR PLAN

# THIS IS THE NURSERY AND MEETING ROOM



INTERIOR PERSPECTIVE

Here is an interior view of the nursery, which illustrates the relationship between the indoor and outdoor play areas. In the background can be seen the swing, teeter totters, and other equipment usually found in a play area.

The doors to the right lead to a cloakroom and a chair storage area. The alcove is used as a wash-up area. Low cupboards under the west windows serve as toy storage space.

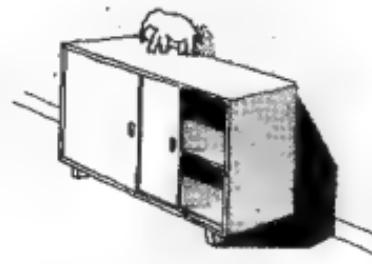
The furniture is the proper size for the children who will use it. Various cupboard units, chairs and folding cots are shown. It should be noted that these chairs and cots can be easily stacked and stored, when the room is to be used for adult functions.

The nursery is directly connected to the clinic, hence a nurse will always be available. Such an arrangement suggests the possibility of using the nursery as a kindergarten. If the centre were located on or near the school grounds, such an arrangement should prove advantageous. Another possibility for the nursery would be to use it as a place for mothers to leave their under-school-age children when they wish to go shopping, etc. Again, it could be used in a similar manner when parents are attending meetings, dances, or other functions which children cannot attend.

## AND HERE ARE SOME NURSERY FURNISHINGS



TABLES AND CHAIRS



STORAGE CABINET



DESK AND CHAIR



PLYWOOD CHAIRS



FOLDING COT



STACKING COT

# A SKATING AND CURLING RINK AS A COMMUNITY CENTRE

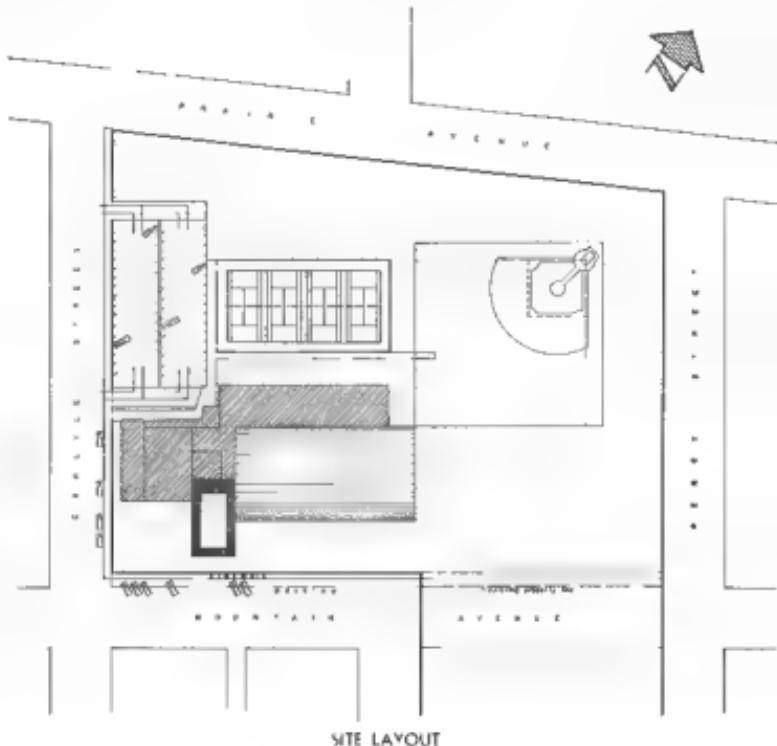
The site layout illustrated on this page is for a community centre that developed more or less into a sports centre. The building houses a gymnasium, curling and skating rinks and bowling alleys.

The centre is located to the north of the school grounds. It is suggested that Mountain Avenue be changed from a thru-street to an approach street, and the school and centre grounds be combined into one area. The sketch plan illustrates how Mountain Avenue could be changed and the areas combined.

Ampie parking space for approximately seventy-five cars has been provided in a parking area adjoining a minor street.

The site plan has been laid out in such a way that the various sports fields have the best orientation. A swimming pool is located to the south of the centre and is well protected from the winds by the building. The pool is in proximity to the showers and lockers within the building.

This building is of special interest to most prairie people because it provides facilities for winter sports - hockey and curling. It should not be considered a true community centre, because it is more concerned with recreation than with the social and cultural activities of a community. The fact that it is located in proximity to the school grounds labels it as one part of a more extensive community centre.



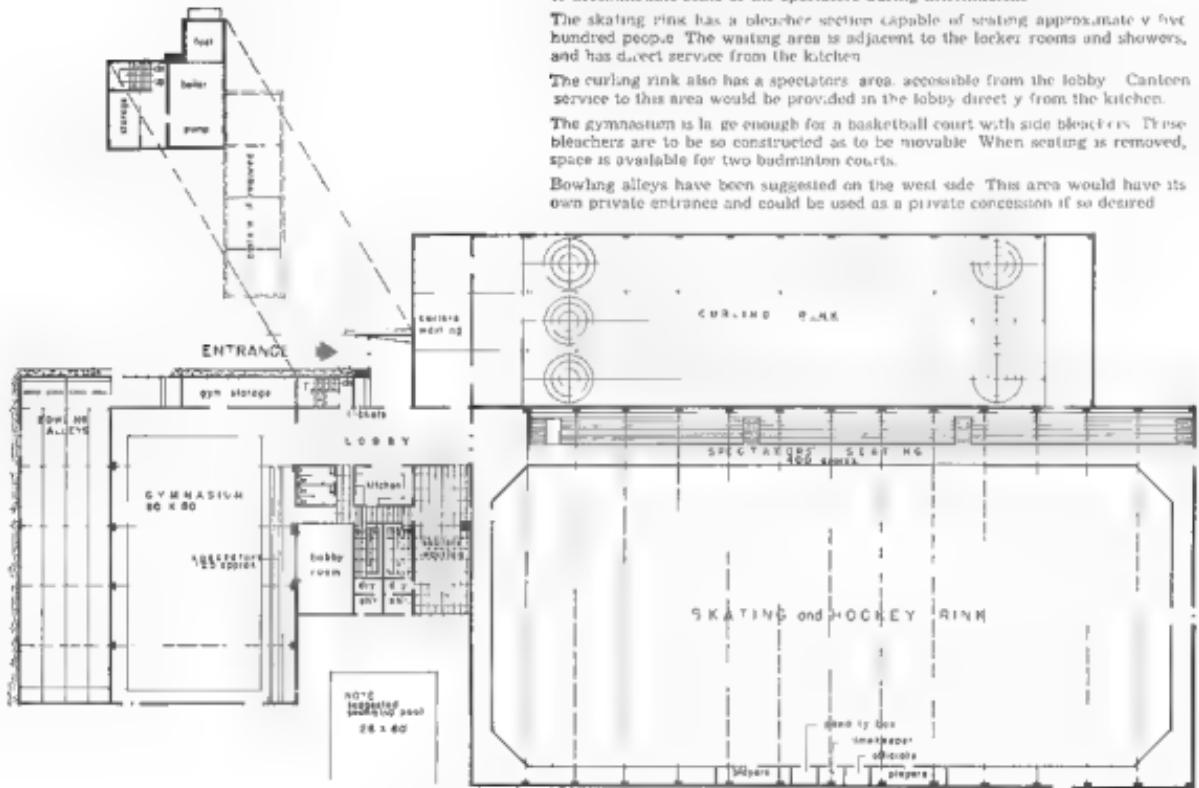
The building entrance is easily reached from the parking area and principal street. The lobby provides access to all parts of the building and is large enough to accommodate some of the spectators during intermissions.

The skating rink has a bleacher section capable of seating approximately five hundred people. The waiting area is adjacent to the locker rooms and showers, and has direct service from the kitchen.

The curling rink also has a spectators' area, accessible from the lobby. Canteen service to this area would be provided in the lobby directly from the kitchen.

The gymnasium is large enough for a basketball court with side bleachers. These bleachers are to be so constructed as to be movable. When seating is removed, space is available for two badminton courts.

Bowling alleys have been suggested on the west side. This area would have its own private entrance and could be used as a private concession if so desired.



MAIN FLOOR PLAN

## A VIEW OF THE BUILDING

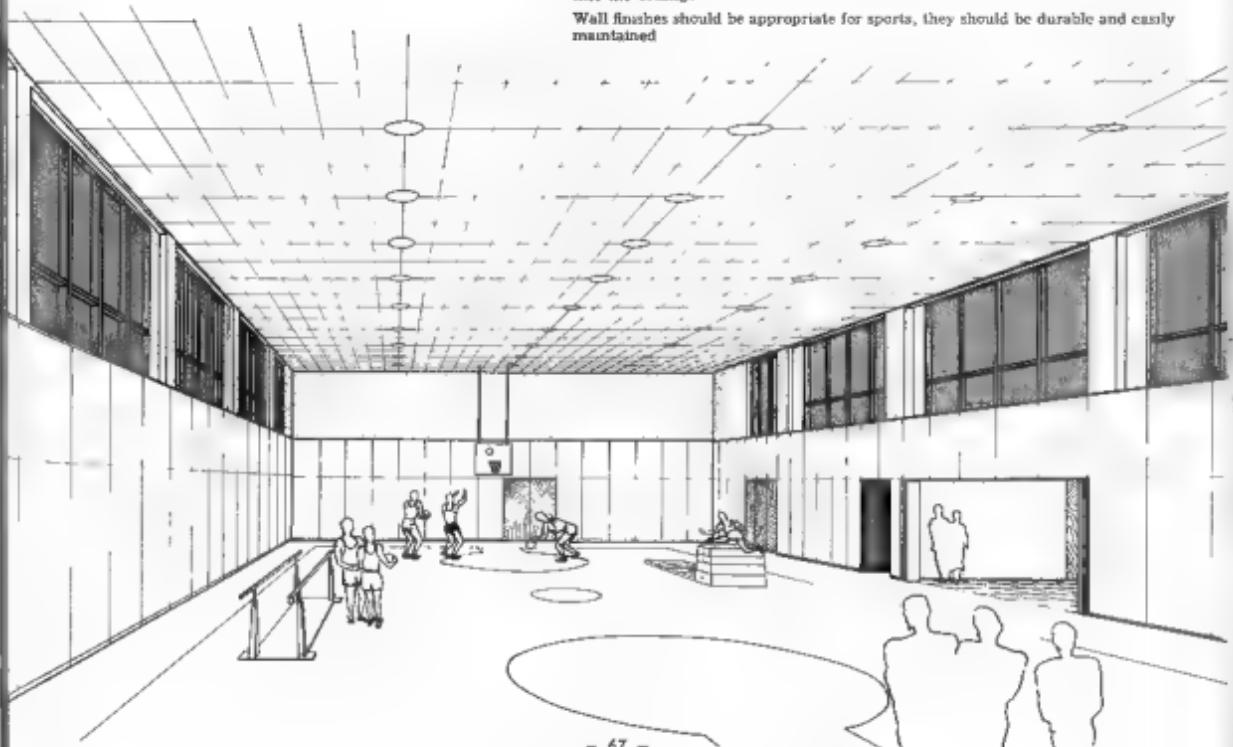


# THE GYMNASIUM

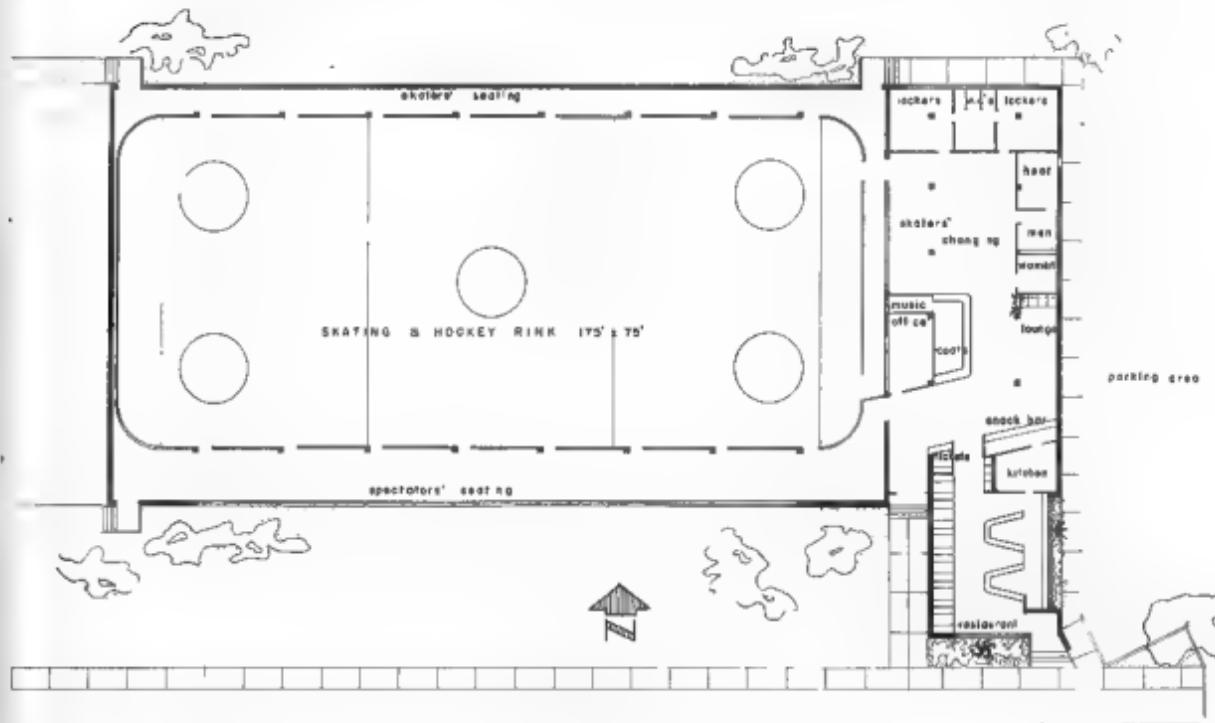
This gymnasium has a floor area large enough for a regulation size basketball court or two badminton courts. Folding bleachers are provided. These can be stored at the north end of the room when not in use. The best flooring for games would be a non-slip material and to this a special preparation could be applied when it is used for dancing. Tongued and grooved hardwood flooring on felt, laid parallel to the short axis of the room, is suggested.

Bi-lateral lighting is achieved by the use of clerestory windows on the east and west walls. This natural lighting is supplemented by artificial lighting recessed into the ceiling.

Wall finishes should be appropriate for sports, they should be durable and easily maintained.



## ANOTHER SUGGESTION FOR A SKATING RINK LAYOUT



## THE EXTERIOR



This building should not be classified as a community centre, but merely as a part of the community centre facilities. It is a skating rink with waiting and locker areas and a restaurant concession. The building is divided into two parts—the skating area (unheated) and the restaurant and service area (heated). The wall separating the two is glazed to permit a view of the rink from the heated waiting area.

The ticket office is the control centre of the building. The skating area, waiting and skate changing area and the restaurant, are all in view of this office.

Two dressing rooms have been provided for hockey players. A public check room is located in proximity to the skate changing area. The restaurant has a separate street entrance, and can be operated independently of the rink. It is also directly accessible from the skaters' area.

Although the rink is shown enclosed, it might be more practical in many instances to leave it uncovered, with the waiting room remaining enclosed and heated.

*This building is adapted from a design for a Roller Skating Rink in Oklahoma, with the kind permission of J. Boaz, Architect.*

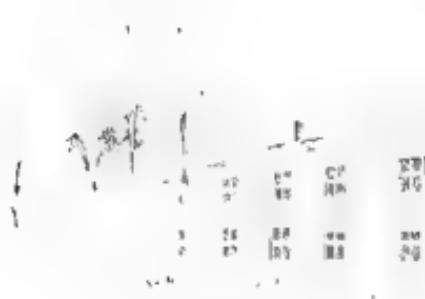
IN SOME CASES IT MAY BE WISE TO CONVERT  
AN EXISTING BUILDING FOR USE AS A CENTRE

In many communities the attitude existing in regard to the "old hall" is often erroneous. It is quite natural to desire something new and to feel that it is the only way to get action in the community. However, the fact remains that cost limitations are real and must be faced. Often money can be well spent in the "face-lifting" of an old unit.

When the community recreation committee has completed its activity program and a survey has been made to reveal the inadequacies of existing facilities, the building program should begin. If an existing building has been located and it appears to have the fundamental requirements for a centre, an architect's advice should be sought. The architect can determine by inspection the structural condition of the building and the ease with which it may be adapted to community centre use. However, it may be the desire of the community to purchase a building, in another location, disassemble the structure, and reassemble it on the community centre site. Such a project should be carefully investigated before being undertaken. The main reason for reconversion is a financial one, and it should be established beforehand that any remodeling will definitely prove less costly than the construction of a new building.

Existing scarcity of many building materials should also be carefully considered before the financial issue has been settled. Reconversion of an existing building may quite possibly do away with the problem of short supply of materials, and, in this way, present a more economical solution from the standpoint of delays in construction, which are definitely costly.

# AN OLD HALL REMODELLED FOR A COMMUNITY CENTRE



## THE OLD

The drawings on these two pages illustrate the possibilities of reconversion. The building committee of this community, after discussing their problem with an architect, purchased the old town hall. The building was a rundown frame structure, sound, but certainly not an adequate hall for an active community.

The old hall had two storeys. The top storey was used for meetings etc. The lower floor had a low ceiling, and was broken up by the columns supporting the second floor. These bad features, along with the fact that the stage facilities were inadequate, put definite restrictions on the use of the hall. No changing or lavatory facilities were available, and no provision had been made for kitchen service to any of the rooms in the hall.

The exterior of the building speaks for itself. The structure, no matter how well maintained, would never be an asset to a thriving community.



MAIN FLOOR PLAN



THE NEW

The architect decided to remove the second floor, eliminating the columns and increasing the ceiling height of the first floor, thus making the area useful for dances, movies, etc. The lumber salvaged from the second floor was used in the construction of a more adequate stage at the rear of the building. An addition containing a lobby, small meeting room, kitchen and lavatory facilities, was made to the front of the building. On the second floor of this addition is an office, projection booth and storeroom.

The old structure has been stuccoed, and the windows re-arranged. The additions are finished with natural stained siding, creating contrasts in color and texture with the stucco of the hall. The mass of the building and the various finishing materials combine to make the reconverted hall a more pleasing structure.



# AN ARMY HUT CAN SOMETIMES BE A TEMPORARY SOLUTION TO YOUR PROBLEM

Sections of army H-huts may be used in various combinations to provide the basic facilities for a community centre. A large room for public gatherings, and several smaller rooms planned to meet the many and varied requirements of the community, can be readily adapted to the hut shape.

Various exterior finishing materials may be used. Some suggested materials are clapboard siding, wood or asbestos shingles, stucco, asbestos or plywood panels or, combinations of these materials.

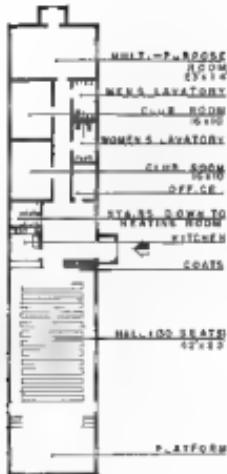
The basic size of an army hut section is 24' by 120' with a 10' ceiling. It must be emphasized that this shape is only suitable for a building of a temporary nature and, it would therefore be impractical to make extensive alterations in converting the hut.

Since the space within an army hut is entirely open, it is possible to plan for the flexibility that a community building requires. At the same time, the hut structure may be left largely intact, thus keeping expenditure to a minimum. Most windows and doors can be made to fit the plan layout. However, to provide adequate lighting for some rooms, additional windows may be required.

The building should be heated with hot water or steam. Facilities for the heating equipment can be housed in a partial basement which would include the boiler room, fuel storage room, and possibly an additional storage room.



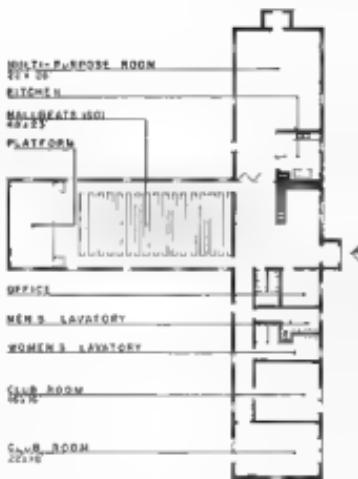
In this scheme wings have been added to either side of the basic hut shape to form a cross plan. Here through the use of folding doors, it is possible when occasions demand, to open the hall, multi-purpose room and lobby into one virtually unobstructed space. The hall, which seats one hundred and seventy persons, approaches the maximum practical size for army hut usage. A room for library purposes is located near the entrance and isolated from the other activities in the building. This room should receive adequate and proper natural light.



## PLAN 1



## PLAN 2



### PLAN 3

A central lobby is provided in which open coal-racks are located. The hall is equipped with removable seats and a low platform. A kitchen and canteen is a necessary adjunct to this room. Chimney flues are located near the kitchen in all plans to facilitate the use of coal or wood stoves, should other types prove impractical.

The club rooms will have many uses, serving as hobby and craft shops as well as meeting rooms. These will undoubtedly be the most popular rooms in the building. Adequate lavatories and a small office complete the requirements for this building.

This plan has similar requirements to Plan 2. However, a partial wing has been added thus allowing a little more space. The multi-purpose room has been equipped more specifically for use as a kindergarten. The corridor in the club room wing which has been placed to one side rather than centrally makes larger sized rooms possible.

Here, the meeting hall has been housed in a sixty foot wing just off axis with the main entrance. The multi-purpose room has been increased in size and made to open on the lobby by means of folding doors. A kitchen has been placed adjacent to this room. The multi-purpose room, by virtue of its separate entrance, may be used for various gatherings without disturbing activities in the rest of the building.

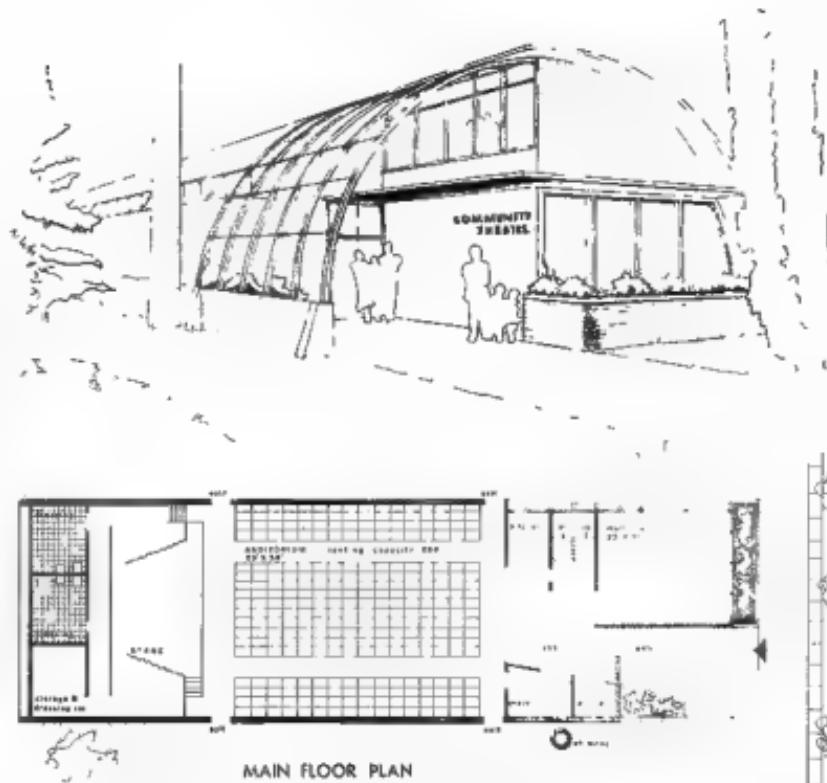
# A QUONSET HUT USED AS A COMMUNITY THEATRE

Wartime use and development have made the quonset structure a popular type. The ease and speed of construction make it readily usable in any locality.

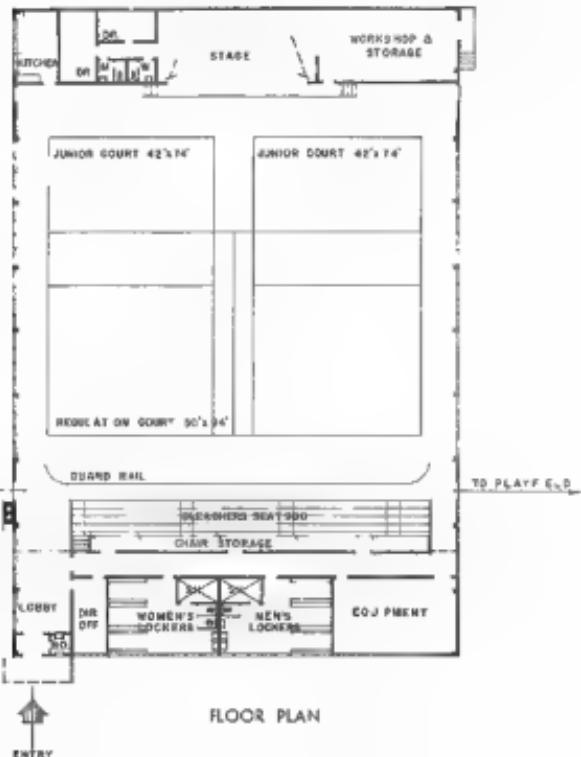
The structural frame consists of steel arch sections placed 4' - 0" on centres and light steel purlins, to which sheet surfacing materials can be nailed. The concrete foundations must be specially designed to take care of the thrust developed by the arches.

Shown here is a scheme for a community theatre seating approximately three hundred persons, making use of a quonset 40' (span 40'). A multi purpose room has been provided on the main floor and an upper level houses a large club room and movie projection room.

Many people have the opinion that a quonset hut makes an unattractive building and therefore try to hide it behind a disguising facade. However, the quonset is a simple straightforward structure, suitable in itself for many functions, and its form should be emphasized rather than obscured.



# THIS IS AN RCAF HANGAR CONVERTED INTO A GYMNASIUM—AUDITORIUM



An air force hangar may be utilized as a community dramatic centre. With the installation of suitable flooring, the hangar provides a large gymnasium suitable for most indoor games. Maximum floor usage would include

- One regulation basketball court
- Two junior basketball courts
- Three volleyball courts
- Six badminton courts

Bleachers at one end will seat nine hundred spectators. Locker facilities and chair storage areas have been located under the bleachers.

The plan shows an arrangement for stage facilities at the opposite end of the gym. Thus, the hangar is adapted to use for theatricals, movies, dances and bazaars. An alternate plan could incorporate a two story club room wing in place of the stage. Should this be done, it would be possible to glaze the interior partition so that the gym is visible from the club rooms. Such glazing should be protected on the gymnasium side. The club rooms may be housed in an additional wing if both stage and club room facilities are desired.

A logical addition to the gymnasium would be a swimming pool which might also be housed in an adjoining wing.

## CONSIDER THE CONSTRUCTION OF THE COMMUNITY CENTRE

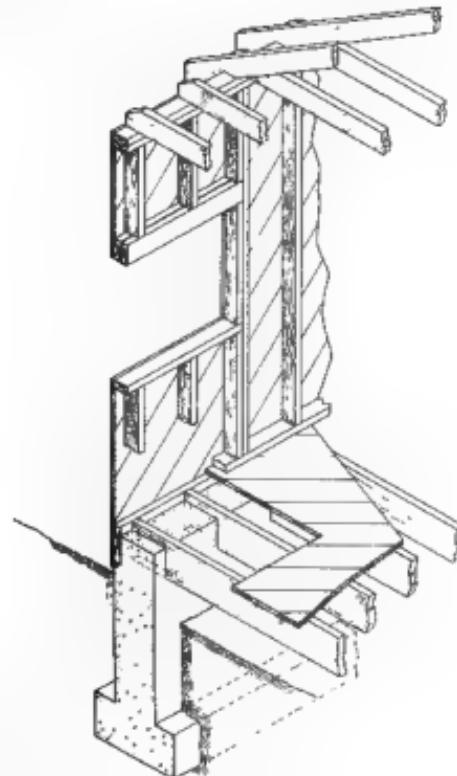
The purpose of this section is to acquaint prospective builders of a community centre with the various methods of construction which could be used. The final decision, however, should be made on the advice of the architect and consultant engineers, who are best qualified to decide what types of construction are suitable for local conditions and requirements.

## SOME FACTORS GOVERNING THE CHOICE OF STRUCTURE ARE:

- Size, shape and use of the building
- Length of span and the height of the building
- Availability and cost of all materials involved
- Availability of skilled workmen such as carpenters, bricklayers, masons and steel workers
- Durability and ease of maintenance in relation to the initial cost
- Appearance of the finished structure
- Number and type of windows desired
- Fire resistance of the materials

## THESE FOUR GENERAL TYPES ARE MOST COMMONLY USED

WOOD FRAME  
MASONRY WALLS  
STEEL FRAME  
CONCRETE FRAME



### WOOD FRAME

#### Pro

- light in weight
- low in cost
- easy to construct
- most materials available locally
- carpenters usually available
- long spans possible with laminated arches or trusses
- very suitable for smaller buildings
- due to the flexibility changes can be made quite easily

#### Con

- costly to maintain
- unsuitable for high buildings
- not as durable as masonry or steel
- not fire resistant

**NOTE:** The three sketches shown are intended only as suggestions, and are not to be used verbatim. There are many variations and combinations possible that should be investigated. Again, the final decision should be left to a qualified architect or engineer.

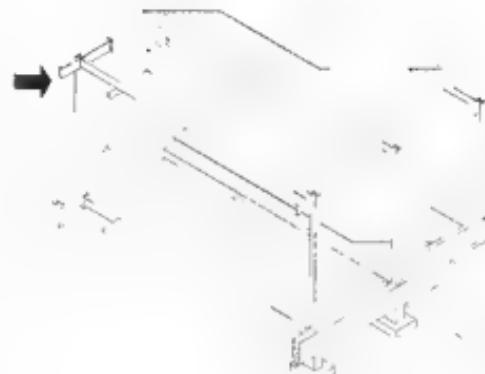
### STEEL FRAME

#### Pro

- fenestrations independent of structure can be large
- walls may be light, independent of structure and easy to alter or remove
- long spans and wide spacing of columns possible
- fire resistant if steel is protected
- low maintenance costs
- very durable

#### Con

- most steel for construction must be imported to Canada
- skilled workers required for erection
- relatively high in cost



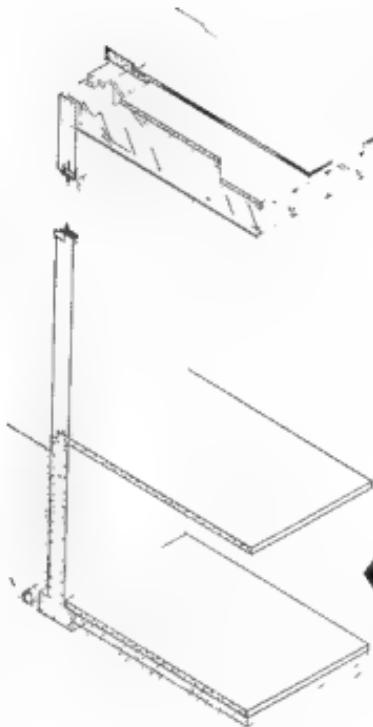
### MASONRY BEARING WALLS

#### Pro

- no vertical structural members necessary
- little or no steel required
- very durable
- maintenance costs low
- may be used as firewalls between adjacent buildings

#### Con

- windows must remain relatively small
- walls tend to become heavy
- solid masonry walls generally have poor insulating qualities
- expensive—skilled help required for erection
- relatively inflexible for alterations
- some of the materials may not be available locally
- cost is high



### REINFORCED CONCRETE FRAME

Reinforced Concrete is a permanent, versatile, fire resistant material that may often replace steel frame construction.

In the small community centre reinforced concrete has its chief value in foundation and floor slab construction. It is too heavy to span economically large open areas such as auditoriums and gymnasiums, etc., and in such cases is best used in combination with steel frame.

## FOUNDATIONS

Since soil conditions vary so greatly from one locality to the next, it is impossible in a publication of this sort, to cover all the possibilities. The soil conditions should be carefully studied by an engineer who has been recommended by the architect.

Unless the building is resting on bed rock, the foundation should go down at least five feet below grade to avoid frost damage. All footings should be of poured concrete and of such size and design as to carry the building properly and to suit local soil conditions. They should be designed by the engineer.

Foundation walls may be of poured concrete, concrete block, or stone. For foundations that support frame walls, the minimum thicknesses are: 8" for solid materials, 10" for hollow materials. In the case of foundation walls enclosing excavated areas, concrete walls should be not less than 10" thick, and similar stone walls 16". Where reinforcing steel is not available, it will be necessary to have a continuous wall footing around the perimeter of the building. If reinforcing is available, a beam and pier type of foundation is possible. This is a more economical method. The beam, however, must be carefully designed to withstand safely all possible loadings.

## CONCRETE

**Mix:** The concrete mix is composed of three elements, water, cement and aggregate. Normally the aggregate is made up of varying quantities of sand and crushed stone. The use of inferior aggregates should be guarded against. The failure of much concrete work can be attributed to improper grading or dirty aggregates.

The strength of a concrete mix depends directly on what is termed the "water-cement ratio" and is usually expressed as the number of Imperial gallons of water per bag of cement (87 lbs.). The amount of aggregate added to the water-cement paste depends directly on the consistency of mix desired. Generally the best mix will be the stiffest one that can be readily handled and placed in forms. Again the importance of using a proper proportion of coarse and fine aggregate should be stressed since too much of either coarse or fine material requires an uneconomical use of the water-cement paste. (Consult a reputable cement manufacturing company for advice as to what proportion of mix to use.)

**Formwork:** Forms should be used on both sides of foundation walls. Earth may be used only on rare occasions and almost never proves satisfactory. Forms are usually constructed of wood, but steel forms are quite extensively used for buildings of flat-slab construction.

## FLOOR CONSTRUCTION

**Relative costs:** 1. Light wood joist construction

2. Light steel joists with timber floors

3. Light steel joists and reinforced concrete slab

4. Reinforced concrete slab and beams

This order may be somewhat affected by local conditions and changing prices of labor and materials, but the list will give a fair idea of relative costs. This list does not imply the relative merits of these types of floor construction. The choice will be dictated by the structure of the building.

**Wood Joist:** The size of floor joists required will be governed by the local building code. If no such code exists, the National Building Code will govern. Common spacing is 17" or 16" centre to centre, and is again governed by the Code, depending on the load to be carried and the size of the joists used. The sub-flooring used is usually  $\frac{3}{4}$ " shiplap, and for best results should be laid diagonally.

**Steel: Open-Web Steel Joists:** These must be used in compliance with the directions given by the manufacturer. If nailing strips are used, the conventional type of sub-floor may be used. If mesh reinforcing is used, a concrete slab may be laid.

**Steel Beams:** These must be designed by an engineer. Wood joists may be put between the beams, or on top, as desired. Then the conventional wood floors may be used. As an alternative a concrete slab may be poured on top of these beams.

**Concrete:** Here again, a structural engineer should be responsible for the design. Unlike wood or steel, concrete floors may be poured directly on a gravel or cinder fill over earth, both at grade level and in the basement. Reinforced concrete construction has been used extensively throughout the country, but the cost of construction is relatively high.

## WALL CONSTRUCTION

**Wood Frame:** Frame construction is that in which the structural elements are of wood. The usual size of the wall studs is 2" by 4", and the spacing may be 12" or 16" centre to centre. This spacing permits convenient and economical use of sheet materials which are usually 4" wide. Accessories like heating ducts, batt insulation, etc., are readily adapted to 12" or 16" spacing. Studs should be fire-stopped where

they pass through the floors. Double studs should be provided at all openings and double headers on edge over all openings.

The interior treatment of frame walls is usually plaster or some sheet material like plywood or wallboard which is available under various trade names.

The exterior has a great variety of possible finishes. These include siding, both vertical and horizontal, stucco, wood or asbestos shingles, plywood and brick veneer. These will be treated in detail in the section "Finish Materials".

**Brick and Tile:** The combination of these two materials is very popular. Brick gives a pleasant and good weathering exterior surface and the tile provides the insulation. Certain building codes do not permit the use of tile in bearing walls. In such cases, where it becomes necessary to construct a solid brick wall, extra insulation must be provided on the interior surface.

Solid brick walls must be supported at right angles to the wall face at intervals not exceeding eighteen times the wall thickness. This support may be obtained by cross walls, piers or buttresses.

**Concrete Block:** Concrete blocks are hollow and come in 16" lengths, 8" heights and thicknesses of 4", 6", 8" and 12". They can be used for exterior and interior walls and partitions, and for bucking brick or stone facings. They can also be used for foundation walls.

**Stone:** Stone is often used as a facing material for brick, concrete, concrete block or tile walls. In such instances it is clamped as a finish material.

## INTERIOR PARTITIONS

**Bearing Partitions:** These carry a load as well as their own weight. Since these partitions are essential to the structure they do not lend themselves readily to change or removal.

**Non-bearing Partitions:** These may be of light construction and if desired movable. They can be fabricated of plaster and lath, or wallboard on wood or steel studs. Veneers of brick or tile and panels of glass blocks may be included when appropriate. Glass panels or flexible pre-fabricated panels may also be used. It is important that non-bearing partitions be as soundproof as possible.

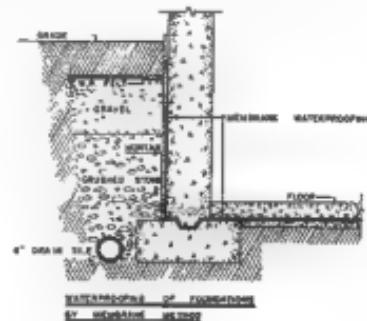
## WATERPROOFING AND DAMP-PROOFING CONCRETE

**Waterproofing:** The prime requisite of waterproofing is proper drainage. This is often the only preventative required. As a further measure, waterproofing may be effected by any of the following methods.

- By using high quality concrete
- By the integral method, which consists of adding a material to the concrete mixture to act as a void filler. This filler may be finely ground clay or sand, hydrated lime, chloride of lime, oil emulsions or lime soaps.
- By coating the inside or outside surfaces with a cement mortar, bituminous materials, or other substances to act as a water seal
- By the membrane method, which means covering the outside surfaces with a membrane consisting of several layers of waterproof felt, cemented together, and then cemented to the surface with a bituminous material applied hot. The bituminous material may be coal tar, pitch or asphalt. For successful results the bituminous membrane must be absolutely continuous around the walls and under the floors. The membrane should be protected from injury by mortar, brick or concrete. This method is the most reliable, but the effectiveness depends upon the quality of the workmanship.

**Damp-Proofing:** Dampness on the interior surface of a wall may be due to the water penetrating the wall by capillary action. The remedy for dampness is to seal the pores of the concrete from the outside. Most methods used for waterproofing also serve for damp-proofing, but the use of a seal coat on the inside may be effective if the wall is not subjected to freezing temperatures.

Dampness may also be caused by condensation on the wall. The only cure for this is to improve the insulation in the wall, thus keeping the inside surface at a temperature approaching the room temperature.

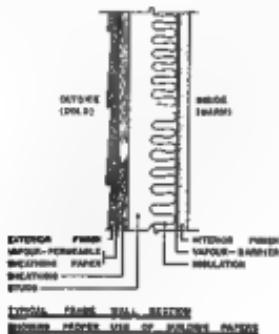


## INSULATION

The numerous insulating materials can be divided into the following general groups.

- **Loose fill insulation** this includes granulated mineral wool and cork, sawdust, shavings, dried moss, vermiculite and pulverized gypsum and fibre. Unless properly installed, loose fills have a tendency to settle, thus leaving an air space at the top of the fill.
- **Flexible insulation** this includes mineral wool in bats and rolls, and blankets of dried seaweed, hair, felt and paper
- **Semi-rigid insulation** this includes cork slabs and boards of compressed wood fibre
- **Reflective insulation** this refers to materials such as aluminum foil

The effectiveness of the above mentioned materials, with the exception of aluminum foil, depends to a great extent on their thickness.



## VAPOUR BARRIER

A standard wall construction of maximum efficiency calls for the use of two building papers,--(1) a vapour permeable sheathing paper on the cold side and, (2) a vapour barrier paper on the warm side.

The numerous types of building paper and felt may be classified as follows

### EXTERIOR (Cold side)

- Dry Sheathing Paper
- Tar Saturated Felt (12lb and 15lb.)
- Tar Saturated Paper
- Asphalt Saturated Felt (15 lb.)
- Asphalt Saturated Paper (25 lb. -400 sq. ft.)

### INTERIOR (Warm side)

- Aluminum or copper foil on paper or lath
- Roofing felt imbedded in and mopped with asphalt
- Heavy asphalt roofing papers
- Asphalt coated felts and papers
- Duplex paper (asphalt layer between two kraft papers)
- Thin waxed papers

The recommended installation consists of a vapour-permeable sheathing paper between the sheathing and exterior finish material. It is very important that this paper be vapour-permeable to permit the free passage of water vapour out of the wall to the outside before it has a chance to condense.

The heavy vapour barrier should be placed between the insulation and the interior finish, that is, on the warm side of the wall. This is to prevent the passage of water vapour from the room to the cold portion of the wall where it will condense. See illustration for example.

The correct use of a vapour barrier in an insulated frame wall is very important. If the vapour barrier is improperly used or omitted altogether the resulting moisture condensation may damage the exterior or interior wall finish as well as rot the studs and insulation.

The efficiency of a vapour barrier depends not only on the vapour resistance of the membrane employed, but also on the manner in which it is used and installed. The joints must be properly sealed to prevent leakage or the vapour barrier will not be capable of fulfilling its purpose.

## DOORS

In the past, most doors have had from one to six panels. These panelled doors were difficult to clean. Flush panel doors have largely eliminated this trouble. The appearance of these doors is pleasing and the cost is in the low price range. Interior doors are usually  $1\frac{1}{8}$ " thick. Exterior doors must be heavier to withstand the cold and extra wear. They should be  $1\frac{3}{8}$ " thick.

## WINDOWS

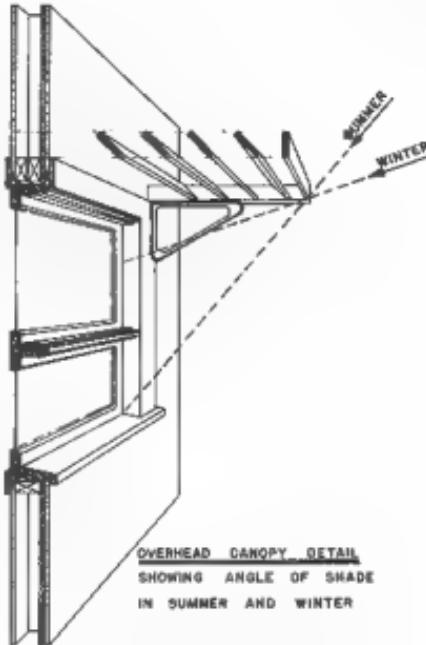
The main purpose of windows is to admit light. Their secondary purpose is to provide ventilation if no other means is employed.

Proper lighting is essential and sufficient fenestration can be quite easily achieved. In the construction of bearing walls, the window mullions should act as structural members. In walls that are independent of structure, the fenestration offers no problem at all. Bands of windows, or entire areas of glass may be placed at will. The mullions need only be heavy enough to give lateral support for the glass.

## SUN CONTROL

The proper control of sunlight is important. Windows on the south should be shaded from direct sunlight in summer by a solid or louvred horizontal canopy. Windows on the west are more difficult to shade. Screens with built-in louvres may be used during the summer and removed in the winter. These screens permit the free passage of air but tend to obstruct the view.

THERE ARE SEVERAL TYPES OF WINDOWS IN USE AT PRESENT. THEIR CHARACTERISTICS, ADVANTAGES AND DISADVANTAGES ARE LISTED ON THE OPPOSITE PAGE





FIXED SASH

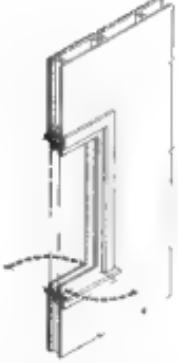
This is the most economical type of window and is the easiest to make weatherproof. It provides no ventilation.



DOUBLE-HUNG SASH

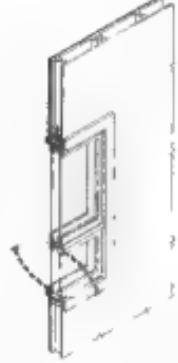
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This type has been widely used because of its good weatherproofing qualities. However it is more complicated than fixed sash, and the meeting rails interrupt the view from the window. This type is easy to open, and is easily screened. Although readily available, it is more expensive to install than fixed sash.



CASEMENT SASH

These are usually hinged at the side, and may swing either in or out. Casements are excellent for good ventilation, but are difficult to screen and weatherproof. This is also true for windows that hinge at the top, bottom or pivot about the centre.



UPPER SASH FIXED  
LOWER SASH OPENING

Two of the types have been combined to form an excellent and popular window. This combination has a fixed sash at the top to give clear uninterrupted vision, whereas the lower portion of the window is hinged either at the top or bottom and may swing in or out. Screens are required only for the lower portion.

The sashes described so far are of wood. However the same types are manufactured in metal.

#### GLASS BLOCK

**Use and insulating qualities:** glass block areas are used primarily to transmit light where window openings are not required for ventilation, or where privacy is desirable. Such areas diffuse the light passing through them and thus reduce glare. They have good insulating value, less condensation than ordinary windows and are reasonably soundproof. They may be used in interior or exterior walls, but can carry no other weight than their own. Certain types of glass blocks

can be used for their light-directing qualities. Glass blocks must be installed according to the directions supplied by the manufacturers.

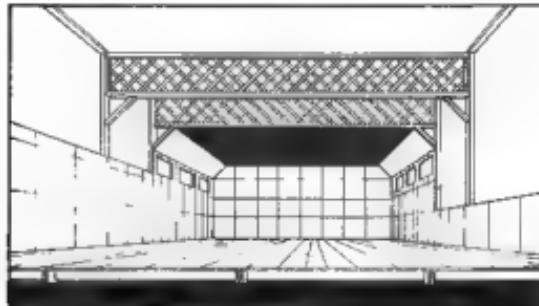
**Size:** Glass blocks are available in the following sizes:  $5\frac{1}{2}$ " sq.,  $7\frac{1}{2}$ " sq.,  $11\frac{1}{2}$ " sq. and all are  $3\frac{1}{8}$ " thick. If  $\frac{1}{4}$ " mortar joints are used the courses become 6", 8", or 12".

**Cost:** The cost of glass block is much higher than that of ordinary glazing.

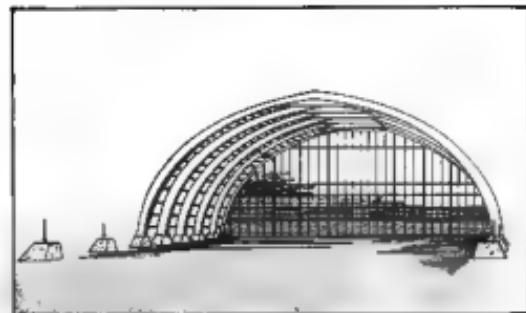
## ROOFS

**Wood.** In frame construction, wood rafters or trusses are used. Rafters are spaced the same as the studs in the supporting walls. The roof sheathing is usually 7/8" shiplap laid diagonally to the rafters. The selection of roofing materials is determined by the slope of the roof. (See page 89)

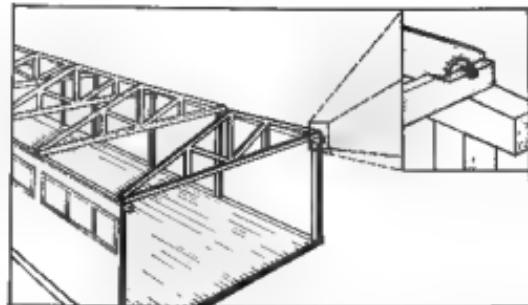
The spanning of large, unobstructed floor areas requires the use of prefabricated roof trusses. Three types of trusses are available



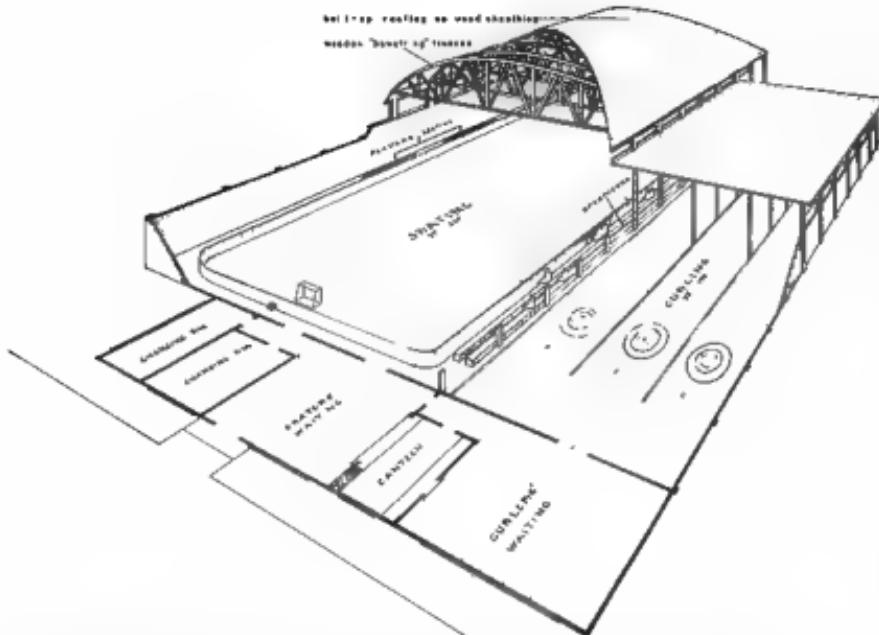
**Nailed trusses**—generally used for spans of 50' or less. Possibly the most economical truss for rural construction because of its simple assembly and the availability of required materials.



**Glued laminated trusses**—this type of truss is a comparatively new and versatile development. The arches formed by laminating standard boards are strong enough to permit their use without trussing or bracing. Hence they prove most satisfactory when high-wide, unobstructed interiors are desired.



**Connector trusses**—in this type of truss, the members are held in place by metal rings or dowels, which increase the joint strength of the structure. These connectors are installed by either placing them in pre-cut grooves or forcing them into the wood by pressure. This type of fabrication presents an economical use of timber but requires the services of an experienced erection crew.



## STEEL IN ROOFS

In some instances it may be expedient to use steel members for roof construction.

Open-web steel joists, spaced at from 16" to 24" centre to centre, are suitable for short and medium spans. Steel beams, in combination with purlins, spaced every 10' to 12' may be used on similar spans.

Where relatively wide spans are required, it is advisable to use built-up steel trusses.

## ROOFING MATERIALS

The type of roofing material that can be used, depends directly upon the slope or incline of the roof.

For a roof with a rise of 6" or greater in a 12" run, wood or composition shingles should be used. Roll roofing should be used for roofs with a rise from 2" to 6" in a 12" run. For inclines not exceeding 2" in 12" built-up tar and gravel roofs are required.

Whatever type of roofing is used, it should be laid in strict accordance with the manufacturer's specifications.

## A SKATING AND CURLING RINK

This cut-away section of a curling-skating rink shows clearly the structural and planning features employed. The two rinks have been placed side by side with seating for spectators between them. The spectator area is open to both rinks, thus the necessity for a double set of bleachers is avoided. The skaters' and curlers' waiting areas are separated by a canteen which serves both areas directly. Changing rooms for hockey players are situated at one end of the skaters' waiting room.

The skating surface is spanned by "bowstring" trusses. These trusses are made up of laminated members, consisting of a series of small planks either nailed or glued together to form a sufficiently strong connecting link in the truss. The members are held in place by metal rings or dowels which increase the strength of the structure at the joints.

The curling rink and waiting area have been planned with intermediate supports so that only minimum beams and joists are required.

## CONSIDER THE APPEARANCE OF THE COMMUNITY CENTRE

Much thought and deliberation must be put into the choice of appropriate finish materials for both exterior and interior surfaces of the building. Scientific research in recent years has presented a great variety of materials from which to choose. In order to get full advantage of a material its properties and limitations must be thoroughly understood.

The beauty of a building arises in large part from the skilful combination of materials both inside and out. They must be used harmoniously and appropriately to produce pleasing and durable results. Care should be taken not to cover surfaces with a lot of meaningless "do-dads" and ornaments. Materials are best used when they are allowed to speak for themselves.

Discussions of some materials and an attempt to outline the characteristics and limitations of each are presented on the following pages.

# HERE ARE SOME EXTERIOR FINISH MATERIALS

## ROOFING

**Shingles:** Cypress, redwood and cedar are the best types of wood shingles, the white and yellow pines are only moderately decay resistant. The lower grade of wood shingles are not economical in the long run for either high or low cost buildings.

The life span of shingles may be appreciably lengthened if they are treated with a preservative shingle stain.

If fireproof shingles are required it will be necessary to use the more expensive asphalt shingles. These are available in a wide variety of shapes or patterns and colors. Asbestos shingles can also be used. They have a nicer appearance and are more durable than either wood or asphalt shingles.

**Roll Roofing:** This type of roofing is the easiest and possibly the most economical to apply. However it does not have the wearing qualities of most of the roofing materials mentioned here. Maintenance costs are high, and the appearance is not as good as that of a shingle or tile roof.

**Tar and Gravel:** This type of roof is formed by first covering the surface of the roof with a layer or two of tarred felt, then spreading a coat of pitch over the entire roof. On this three more layers of felt are laid, then coated with pitch in which the screened gravel is imbedded.

These roofs are bonded for five to twenty years depending upon the quality of the materials used and the care with which they have been applied.

**Metal Roofing:** Metal roofing offers a very durable and permanent finish. Galvanized metal and copper roofings require very little maintenance after installation. Although the initial cost of this type of roofing is generally higher than that of any type mentioned above, the fact that metal roofing is permanent and requires no maintenance might tend to equalize the costs.

See page 88 for the relation between the use of these roofing materials and the roof pitch.

**Tile:** The term roofing tile is commonly understood to refer to exterior roof covering made from clay. It comes in units of variable shapes and is laid with edges overlapping. Patterns of roofing tile are so numerous that it is impractical to give a full description of them. Of the various patterns, those which interlock are considered to make the most satisfactory roof. This type of roofing is seldom used with frame or timber construction, for both cost and weight prohibit its use at moderate price levels.

## WALL FINISHES

**Siding:** This is the most popular of finish materials. It is available in most localities, and is easy and economical to apply. When using siding as a finish material, the natural decorative qualities of the wood should be used to the best advantage. A natural stain is usually more effective than is a painted finish, depending of course on the other finish materials that are used. Siding may be placed vertically or horizontally, the latter being the simpler and more economical method.

**Shingles:** These can be used as a wall finish, but they are not as satisfactory as siding or plywood. They require preservative treatment since they tend to curl, split and break loose from the wall surface if not properly protected against the weather.

**Plywood:** For external use plywood should be bonded with moisture resistant glue. Such treatment would keep maintenance costs at a minimum. The natural color and grain of the wood can be preserved and emphasized by the use of various clear or stain finishes.

**Stucco:** The application of stucco may be more expensive than board or shingle finishes, but a stucco finish is more economical to maintain. The natural stucco finish contrasts well with other finishes such as dark toned siding or plywood. If coloring is desired, cement with an added mineral pigment can be used for the final coat. If such cement is not obtainable and if an experienced plasterer is available the mixing of mineral pigment and ordinary cement may be done on the job.

**Brick and Stone:** These provide a more permanent finish material. The type of brick and stone should be chosen for its natural color and texture. Stone should only be used in localities where quarries exist, otherwise the expense involved becomes excessive.

# INTERIOR FINISHES – FLOORING MATERIALS

## WOOD

A good wood floor consists of three separate layers. First, the sub-floor is laid over and nailed to the top of the joists. Then, this sub-floor is covered with a layer of heavy building paper. The finished floor is laid on top of this. This finished flooring may be either hardwood or softwood, but the former is preferable. Oak, maple and birch are considered among the best woods because of their resistance to wear. Hardwood flooring is especially suitable for gymnasiums because of its resilience and durability.

## TILE

Asphalt tile is an excellent flooring for general purpose rooms, presenting a wide color range, good wearing qualities, and relatively good acoustical value. It can be laid over a concrete or wood sub-floor. For rooms that demand a minimum of noise, cork tile is a preferable flooring material.

Vitreous tile has a hard non-slippery surface which is easy to clean. This type of tile is recommended for lavatories, showers, and kitchens.

## TERRAZZO

This type of flooring is made by spreading marble chips of irregular shape over a base of cement, pressing them into the cement with plasterer's floats and rolling them with iron rollers. After the cement base has set, the floor is polished to a smooth even surface. Although it is non-resilient and noisy, it is exceptionally durable, it is therefore recommended especially for lobby and corridor floors and other areas of heavy traffic.

## LINOLEUM

Linoleum is easy to install, easy to replace, easy to clean, and is available in a wide variety of colors and designs. It should not be used where it will receive hard wear as the surface becomes scratched. It can be laid on concrete or wood sub-floor but not in a basement or where damp conditions prevail. It should always have a felt base beneath it.

# WALL AND CEILING MATERIALS

## WOOD- Boards and Plywood Panelling

Boards may be used with a natural or painted finish. The practical advantages of boarding are relative cheapness, easy installation and economical maintenance—especially where the surface is waxed or varnished.

Plywood is a very popular finish material. The natural graining of the wood, and the numerous stains that can be applied, provide possibilities for a variety of pleasing wall finishes. Further variety can be obtained by using differently shaped panels to create patterns. Plywood is obtained in sheets, and can be applied over masonry, concrete or frame walls. It provides good insulation and a very durable finish. Maintenance costs are low and installation is simple.

Contemporary practice tends to expose structural elements. In this way, beams, laminated arches and even trusses can enhance the interior appearance.

## BRICK AND STONE

The use of brick or certain types of stone in a room gives a warm, colorful finish, which presents an interesting contrast to other finish materials. These materials should be sparingly used to emphasize certain features of the room. The best effects can be obtained by confining them to one or two walls.

## PLASTER AND WALLBOARD

A great many varieties of color and texture are possible with plaster or wallboard interior finishes. When plaster is used, paint or wallpaper should be applied. Some types of wallboard, however, do not require this, since a finish is put on when they are manufactured. Since these finishes do not stand up to wear, and maintenance costs tend to be high, their use should be confined to suitable locations.

## CONCRETE

In concrete construction, walls may be left in their natural state. It is possible to obtain an interesting wall texture merely by the type of formwork used. Concrete walls may be painted but the surface should never be disguised to resemble brick or stone or any other material.

A concrete finish is suitable for gymnasiums, auditoriums, corridors, etc., where a durable finish is required, but where warmth of texture is not essential. It is advisable to paint a concrete interior wall, this will prevent the finish from powdering and creating a dust nuisance.

## GLASS

Glass panels form a durable easily maintained surface that will not show signs of age and wear as will many other finish materials.

When used imaginatively, but appropriately, glass can do much to improve interior design. Partitions between corridors and offices, when glazed, will permit the transfer of natural light from more liberally lighted areas. To provide privacy between the areas, a wide variety of obscured glass patterns are available. Ribbed, checkered, and hammered glass patterns all fit neatly into the modern interior. Corrugated structural glass, although a more expensive product, can be used in place of entire solid partitions. The apparent size of small, efficiently planned spaces required by today's economies, can be increased greatly through the use of glass or mirrors. Thus rooms that might otherwise appear small and confined can become pleasant and attractive.

Glass blocks may be found practical for interior partitions where light and openness as well as sound insulation are required.

## THE MECHANICAL PLANT IS THE NERVE CENTRE OF THE MODERN BUILDING

PLUMBING

HEATING

LIGHTING

IT IS IMPORTANT FOR THE PROPER WORKING OF THE  
BUILDING THAT THESE NERVES RECEIVE CONSIDERATION  
FROM THE INITIAL DESIGN STAGE

# PLUMBING

## DRAINAGE

All yard areas should be sloped for drainage to walkways, vehicular ways, or special outlets. Depending on soil conditions, topography and climate subsurface drainage may or may not be necessary over all or part of a site. While any type of drainage may be costly to install, experience indicates that failure to provide for drainage may result in property damage and increased maintenance costs.

Roof drainage is ordinarily discharged to a sewage system, except in occasional cases where soil and topography permit roof water to be discharged over splash blocks and thence to lawns or surfaced areas. In some cases, the roof drainage is collected in a cistern where it is available for use in the Centre.

## WATER SUPPLY

Sources of water supply may be classified as public or private. Public water supply as maintained in cities and large towns is continually being inspected so that it is safe for drinking. In rural areas where the water lacks chlorination, there are a few general precautions that must be observed. Wells of all types should be located at least one hundred feet from and on the uphill side of sources of contamination, and should be protected from surface drainage by impervious curbs or limings, or both. Even a seemingly properly located well may be contaminated in periods of drought or by excessive pumping, when the water table is lowered to such an extent that surface water seeps into the well. Tests should be made from time to time by the proper authorities to make certain that water supply is safe. In choosing a site in a rural area, investigate the following points.

- Before buying the property be sure of an adequate and safe water supply.
- Be sure that a water supply is adequate during periods of drought as well as in rainy seasons.
- If a well is necessary, investigate as to cost of pumping equipment and piping.
- Be sure that water need not be piped excessive distances, or that there are no obstacles such as rocks or sloughs which will interfere with the laying of pipes.

## PLUMBING AND SEWAGE

The installation of plumbing fixtures, water supply systems and sewage disposal systems is of primary importance in planning, both in terms of design and structure. In some areas, especially rural, it is more difficult and more expensive to install satisfactory plumbing systems than it is in others. In urban areas, the problem of sewage disposal is merely that of connection to the public sewer; in rural areas, individual sewage disposal systems are necessary for each building. The most efficient method of sewage disposal in a rural area is afforded by the use of what is known as a disposal bed or absorption field in connection with a septic tank. Briefly, the action of this system is as follows:

Sewage flows into the septic tank at intermittent intervals. Conditions in the tank are such that the greatest amount of settling and undisturbed bacterial action takes place, and a discharge free from solids is produced from this sewage. The discharge is then removed by the sub-surface tile lines, which distribute the overflow over an area of soil for final purification by air evaporation and filtration into the soil.

Septic tanks are made commercially, and are available in all parts of the country. A detailed description of the unit is not necessary here. Information concerning size of unit required can be obtained from any plumbing contractor.

## ARRANGEMENT OF PLUMBING FIXTURES

In arranging the plumbing fixtures for lavatories, kitchens, class-rooms, etc., full consideration should be given to the structure of the building and to the plan arrangement. For maximum economy of installation and operation, fixtures should be so located that outlets are as close together as possible. This does not necessarily mean that fixtures must be lined up against one wall. Fixtures with outlets close together can almost always double up on the use of soil stacks and

hot and cold water supplies. In addition to reducing flow resistances within piping, such practice will eliminate the need for excessive cutting of structural framing for changing direction of floor joists or for furring ceilings below lavatories or kitchens. Where possible, plumbing lines concealed in partitions should be erected before partitions are completely framed.

For information as to the number of lavatories, water closets and urinals required in various establishments and for various numbers of people, see plumbing standards below.

The following notation is an excerpt from the National Building Code

### Assembly Buildings

- (a) In every school or college building there shall be provided for each sex not less than one water-closet for every twenty, and not less than one lavatory or sink for every forty persons of such sex for whose accommodation such building is designed or intended.
- (b) In every other assembly building there shall be provided for each sex not less than one water-closet for every 150 persons, and not less than one lavatory or sink for every 300 persons of such sex for whose accommodation such building is designed or intended.

# HEATING

## TYPES

- Radiation (stove)
- Floor Furnace
- Gravity Warm Air
- Forced Warm Air
- Gravity Hot Water
- Forced Hot Water
- Steam—one-pipe
- Steam—two-pipe
- Unit Heaters

## RADIATION (Stove)

This is the simplest possible type of heating. Heat is supplied directly to surrounding air by radiation

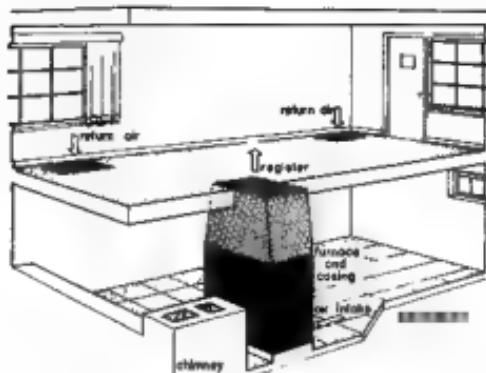
### Advantages:

- 1 Inexpensive
- 2 Easy to install
- 3 Requires no mechanical equipment
- 4 Offers quick heat
- 5 Eliminates need for a cellar

### Disadvantages:

- 1 Has limited range of effectiveness
- 2 Cannot be controlled
- 3 Does not supply uniform heat
- 4 Takes up valuable floor space
- 5 Presents a nuisance problem for firing and cleanout
- 6 In cold climates a stove is needed for each room if doors are kept closed
- 7 Numerous chimneys become necessary if an entire building is to be heated by stoves

The heating systems on the following pages are reprinted from the University of Illinois Bulletin, GR.1, "HEATING THE HOME."



## DUCTLESS HEATING SYSTEM

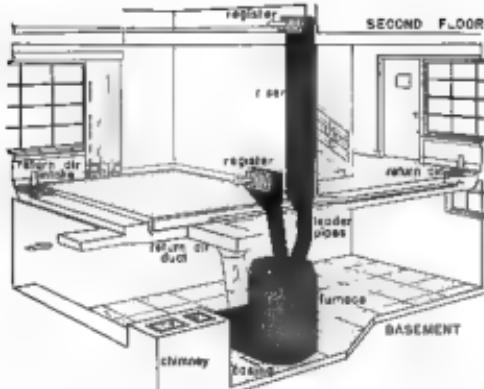
The pipeless furnace is essentially a stove enclosed by two metal jackets, one outside the other. Hot air, generated between the inner and outer jackets, rises through the heat outlet in the floor above and circulates through the rooms to be heated

### Advantages:

- 1 Least expensive type of central heating system in which the heater can be placed in basement
- 2 With heater in basement considerable smudge and dirt is avoided on the main floor
- 3 Unit can be erected by a handyman
- 4 Services of a sheet-metal worker are not necessary

### Disadvantages:

- 1 Difficult to obtain even distribution of heat in rooms which do not communicate directly with the room or hall in which the register is located
- 2 Does not provide the most uniform temperature conditions
- 3 Has a limited radius of effectiveness
- 4 Requires an open grill which, due to hot air blast, makes the floor area directly over the grill unusable
- 5 Presents a chimney problem. If the furnace is to be central, then it may prove impossible to locate the chimney anywhere but in the middle of a large unbroken floor space



### CRAVITY WARM-AIR HEATING SYSTEM

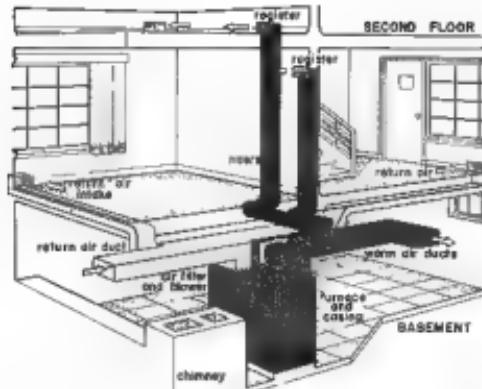
Air circulation in this system depends upon the fact that cold air is heavier than warm air. Cooled air flows downward through return air ducts and enters the bottom of the furnace casing where it again becomes heated. The warmed air then rises and passes up through the supply ducts to the rooms, thus completing the circulation.

#### Advantages:

1. Cost of installation is comparatively low.
2. Air motion produced is desirable for comfort.
3. Moisture can readily be added to the air by means of water pans inside the outer shell of the furnace.
4. Temperature is easily regulated and can be quickly raised or lowered.
5. Does not require accessories involving expenses for upkeep.
6. Will not be damaged by freezing if fire is out during cold weather.
7. By installation of water coils in firebox hot water can be supplied during heating season.

#### Disadvantages:

1. If room doors are closed the system does not function properly.
2. Requires a basement area.
3. Leader pipes reduce the amount of usable basement area.
4. Isolated basement rooms are difficult to heat.
5. Plan must be compact, due to limitations on length of leader pipes.
6. Air filters cannot be used since they tend to restrict the flow of air.



### FORCED WARM-AIR HEATING SYSTEM

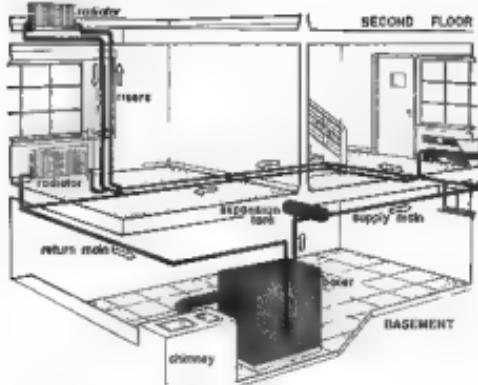
Positive controlled air circulation is maintained by a fan or blower. This blower draws the cooler air from the rooms through return air ducts and through an air-filter, then delivers it under pressure to the space between the furnace and the furnace casing. Here it is heated and passes through the warm-air ducts to registers located in the rooms. Since a positive circulation is maintained by the blower, the air ducts can be much longer and somewhat smaller than those in a gravity system.

#### Advantages:

1. Rapid response to changes in heat demand.
2. Adapted to large structures and basementless buildings.
3. Furnace ducts occupy less space than in a gravity system.
4. Air can be cleaned with an air filter.
5. Registers can be located in the ceiling at the top or bottom of the sidewall, or in the floor.
6. If water coils are installed, hot water can be supplied.

#### Disadvantages:

1. Costs more to install than a gravity system.
2. Requires an experienced installer.
3. Requires a certain amount of maintenance.



### GRAVITY HOT-WATER HEATING SYSTEM

Circulation in this system depends upon the fact that cold water is heavier than warm water. The cooler water flows downward through risers and mains to the bottom of the boiler. Inside the boiler the water is heated and as it becomes warmer and lighter in weight, it rises and flows out through the supply main and risers to the radiators in the rooms.

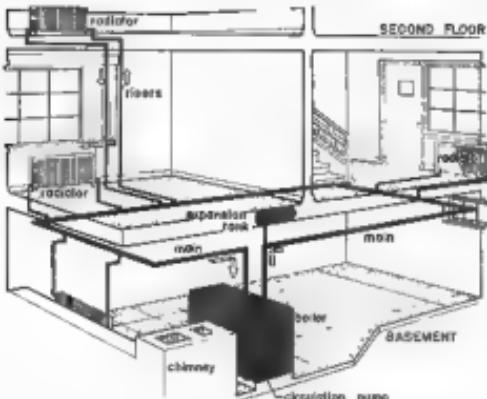
#### Advantages:

- 1 Economical to install, requires a minimum of special fittings
- 2 Heat emission from radiators can be controlled directly by the intensity of the fire in the heater
- 3 Free from accessories which need adjustments
- 4 Boiler is generally equipped with automatic draft opening devices
- 5 Heat stored in circulating water prevents sudden fluctuations of room temperatures

#### Disadvantages:

- 1 Supply and return mains must be large in order to reduce friction
- 2 Not suited to basementless or rambling buildings
- 3 Slower to respond to temperature changes than a forced hot-water system
- 4 Moisture cannot readily be added to the air
- 5 Water must be drained from system if fire goes out during cold weather
- 6 Experienced heating contractor necessary for installation

**One-Pipe System:** The hot water flows through one radiator after another in its circuit, the first radiator receiving the hottest water and the remaining radiators receiving water at successively reduced temperatures. As the water becomes cooler the sizes of the radiators must be increased to emit the required quantities of heat.



### FORCED HOT-WATER HEATING SYSTEM

The circulation of water is positively maintained by the action of a circulating pump attached to the return main. The water is heated in the boiler and is forced through the pipes (mains and risers) leading to the radiators. Two basic types of piping systems are in common use. In the one-pipe system (diag.) a single pipe or main carries the heated water to the radiator and returns the cooled water from the radiator to the boiler. In the two-pipe system the heated water is supplied to the radiator through a supply main and the cooled water is returned to the boiler through a separate return main.

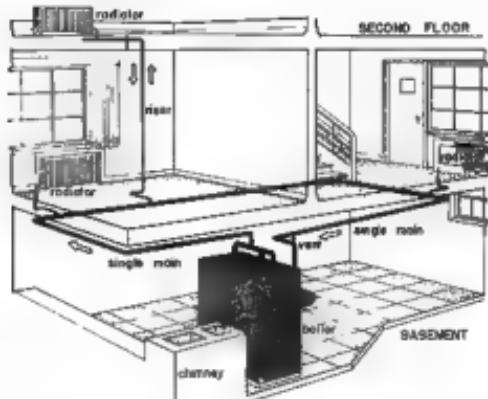
#### Advantages:

- 1 Has a rapid response to changes in heat demand
- 2 Radiators may be located either above or below boiler level—no basement required
- 3 Small pipes are used, thus usable basement space is larger
- 4 Hot water can be supplied all year round
- 5 Heat stored by water prevents sudden fluctuation in room temperature

#### Disadvantages:

- 1 Costs more to install than a gravity system
- 2 Electrical connections to pumps are necessary
- 3 Some maintenance is required
- 4 May be damaged by freezing if fire is out in cold weather
- 5 Moisture cannot readily be added to air

**Two-Pipe System:** The hot water flows through one radiator only in its circuit, the returns from each radiator being connected to a return main running back to the heater. The water is thereby delivered to all radiators at approximately the same temperature as the boiler.



### ONE-PIPE STEAM HEATING SYSTEM

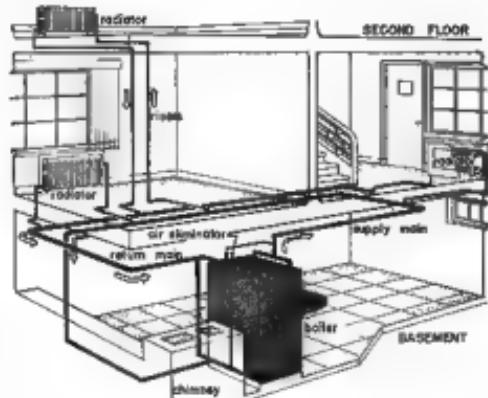
Steam is generated in the boiler. As this steam rises through the single main and individual risers to the radiators, it forces the air out of the system through air valves or vents located on each radiator and at the end of the main. The steam is condensed in the radiators and the water, or the condensate, is returned to the boiler through the same pipes. Since both steam and water are present in the main, the pipes must be somewhat larger than those of the other boiler systems, and the slope or pitch must be very accurately maintained in order to avoid water pockets and 'boiling' or 'pounding' in the mains.

#### Advantages:

1. Economical to install
2. No motors or electrical connections
3. Smaller radiators are required than for water
4. Room temperatures can be raised rapidly
5. Hot water can be supplied all year round

#### Disadvantages:

1. Contains very little stored heat, thus requires more firing than other systems
2. Unsuitable to basementless buildings
3. Not as responsive to changing demands
4. Requires maintenance



### TWO-PIPE STEAM OR VAPOR SYSTEM

Steam generated in the boiler rises through supply mains and risers to the radiators, forcing the air in the system through thermostatic traps which are located at the radiator outlets. These traps are designed to pass the air and the water, but not the steam, into return mains where they proceed to an air eliminator which expels the air through a vent and allows the water to return to the boiler. In this way the air may be kept out of the system for a number of hours, and the boiler may generate steam (vapor) in a partial vacuum with a correspondingly reduced steam temperature. Thus, in this system there are two points at which the temperature may be controlled.

1. The boiler, where a variation in steam temperature is possible
2. The radiator, where the amount of steam admitted can be varied.

#### Advantages:

1. More control of temperatures than in one-pipe system
2. Hot water can be supplied all year round
3. Small radiators required
4. Room temperatures raised rapidly
5. With condensation pump or vacuum pump, the system can be used in basementless buildings

#### Disadvantages:

1. Costs more to install. Requires special traps and valves, etc.
2. Requires constant maintenance
3. Not suited to basementless buildings without special pumps

## UNIT HEATERS

The unit heater consists of a combination of heating coil and circulating fan in a single unit. Low or high pressure steam is generally used as the heating medium; however, hot water may be used if allowance is made for the corresponding reduction in heat output.

Unit heaters give best results when used for heating large rooms, such as auditoriums and gymnasiums, where a large volume of air must be warmed in a short time. A horizontal delivery (Fig. 1) in which the air is drawn through a suspended unit and blown out horizontally, is best suited to rooms with ceiling heights of less than twenty feet. For heights above this and up to a maximum of fifty feet, a vertical delivery type (Fig. 2) that blows the warmed air down from the ceiling, may be found more efficient.

Various types of baffles and diffusers are used which direct the heated air over a wider area and reduce the possibility of drafts.

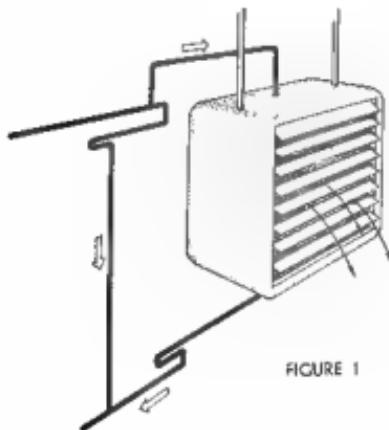


FIGURE 1

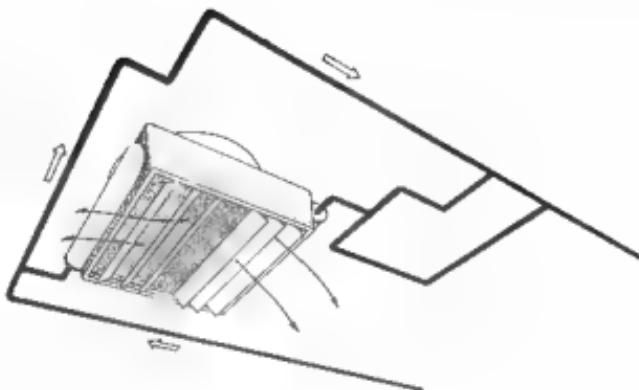


FIGURE 2

### Advantages:

1. Economical method of heating a large space, requires fewer installations and less piping than ordinary types
2. Provides quick heat where it is needed
3. Reduces temperature differentials between ceiling and floor
4. Provides rapid circulation of air without objectionable drafts
5. Provides flexibility of installation and use

### Disadvantages:

1. Limited to fairly large rooms with high ceilings
2. Slight noise of fans and motors while in operation

# LIGHTING

## THE REQUIREMENTS OF GOOD ILLUMINATION ARE

- 1 An adequate level of illumination
- 2 Properly diffused, directed and distributed light
- 3 Undesirable shadows should be avoided
- 4 Glare must be eliminated
- 5 Light should be free from objectionable variation
- 6 The color of light should be appropriate
- 7 Proper brightness contrasts must be provided
- 8 Maximum eye comfort should be sought

In general assuming a good quality of light, the modern trend in lighting is toward a high level of illumination. However, if appropriate fixtures are not used or if fixtures are not properly installed, a high level of illumination will prove just as unsatisfactory as insufficient illumination. The proper diffusion and direction of lighting is necessary.

Proper diffusion will avoid dark, heavy shadows which are highly objectionable where skilled and accurate work is to be done. However in certain cases, shadows are necessary to avoid a cold, flat, unpleasant atmosphere. Therefore, the degree of diffusion required depends upon the type of task to be performed in the area in question. Similarly, the direction of light in an illumination system depends upon the visual tasks involved. Light with very definite directional properties may be advantageous for machining operations, writing, etc. yet may prove unsatisfactory in rooms used for lounging, dancing, or the like.

The distribution of light should be such that the eye is not required to make rapid changes from one level of illumination to another. When a high level of illumination is necessary over a certain area the average illumination over the room in question should be at least one-tenth of the high level.

A very common and serious fault of most lighting systems is the presence of glare. There are two types of glare, direct and reflected, both of which are undesirable.

Direct glare is caused by light which reaches the eye directly from the light source. For example, direct glare is experienced when looking towards a window through which the sun is visible. To avoid direct glare in a lighting system, the fixtures should be mounted above the normal line of vision—an angle of approximately 14° - 18°.

Reflected glare occurs when light is reflected into the eye from shiny surfaces such as walls, ceilings, desk tops, blackboards, etc. No system can be considered absolutely satisfactory as long as glare, either direct or reflected, is present.

Illumination should be free from objectionable variations. In some localities such variations are inevitable due to the use of a 25 cycle hydro-electric system. Variations caused by alternating dullness and brightness of natural light coming from the outside can be avoided by the use of photo-electric devices which keep artificial lighting fluctuating in accordance with outside light. However this is a very expensive installation.

Color of illumination should be carefully studied so that the proper atmosphere is obtained for various activity areas. Color definitely has a psychological effect on people and, if carefully handled, can be used to great advantage in an illumination system.

It can be seen from the above that in prescribing a lighting system one must integrate cost, benefit, task, brightness, color, etc., before successfully supplying the general functions of lighting: visibility, comfort and appropriate atmosphere.

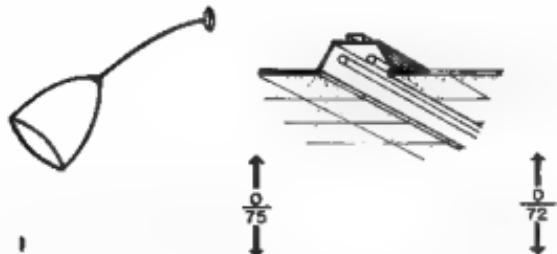
# THESE ARE CONSIDERED ADEQUATE LEVELS OF ILLUMINATION

LIGHTING FOR WORK AND PLAY				
CONFERENCE RECEPTION AUDITORIUM CAFETERIAS WASHROOMS STORAGE	CLASSROOMS CASUAL DESK WORK FILING	STENOGRAPHIC CRITICAL DESK WORK SEWING	DRAFTING WALL DISPLAY CASES INSPECTION	COLOR WORK DISPLAYS
	LIBRARIES WOODWORKING METALWORK			150 - 300 200
			70 - 150 100	
10 - 20 10	15 - 35 20	35 - 70 50		
C A N D L E P O W E R				

## CHOICE OF FIXTURES

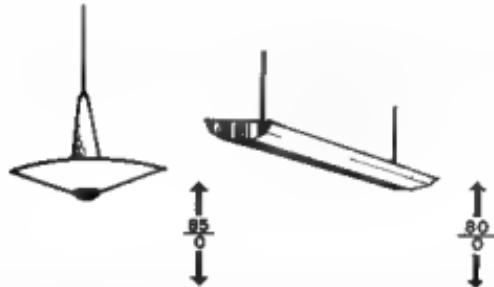
Luminaires vary from the direct type to the totally indirect type. In choosing a luminaire one must consider first the task for which the illumination is required. As will be seen in the following paragraphs, different tasks require different methods of lighting. The next consideration will be the shape, height and finish of the room in which the luminaire is to serve. Again, all these have a direct bearing on the lighting design and ultimate efficiency. Other factors directly concern the lighting unit, they include its aesthetic and functional design, efficiency, and ease of maintenance.

# WHERE TO USE DIRECT AND INDIRECT LIGHTING



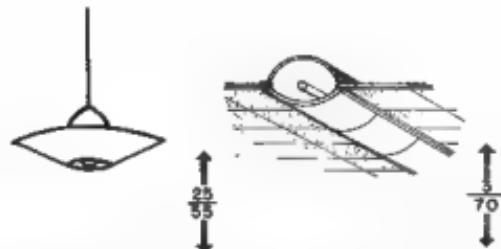
## Direct:

There are two main types of direct lighting—distributing and concentrating. The distributing type spreads the light over a wide area and provides uniform illumination when spacing between units equals the mounting height of units above floor. The concentrating types are used for high narrow areas, where a beam is necessary in order to get the light to the working surfaces without excessive loss.



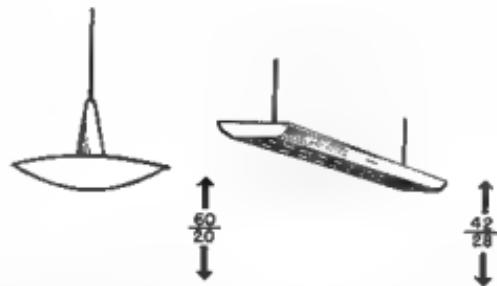
## Indirect:

This offers an especially good quality of lighting since glare is minimized and maximum diffusion is obtained. However, it has a lower efficiency than the types previously considered. Maintenance is very important with this type of unit and such systems are more expensive to install and maintain than are direct or semi-direct systems. Used in auditoriums, lecture rooms, dining halls, lobbies, etc.



## Semi-Direct:

Used in corridors, washrooms, gymnasiums and locker rooms where concentrated visual attention is not necessary. Their use is an attempt to retain the high efficiency of the direct type of unit and obviate some of its more objectionable features.



## Semi-Indirect:

This type utilizes the ceiling and upper sidewall surfaces as the chief medium for the deflection of light, hence the color and texture of these surfaces is very important. Used where tasks require marked attention to detail over extended periods of time—in offices, drafting rooms, classrooms, etc.

## HERE ARE SOME PLANNING STANDARDS

THIS SECTION PRESENTS RECOMMENDED STANDARDS FOR PLAYFIELDS, PARKING AREAS, AUDITORIUMS, STAGES AND OTHER AREAS WHICH PERTAIN TO COMMUNITY CENTRE PLANNING.

# CONSIDER THE PARKING PROBLEM

Parking space should be supplied in proportion to the ratio of car ownership in the community

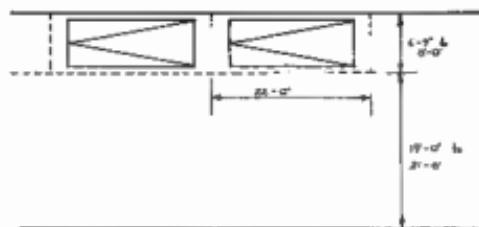
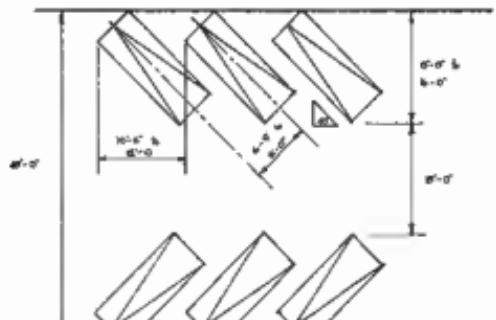
Each car requires approximately 215 sq ft for manoeuvring and parking

Space for two lines of cars 'headed in', plus turning space, is approximately 54' wide.

See attached sketches for further details.

## Table of Road Widths (curb to curb)

1 - way restricted	9 - 10 ft
2 - way lane (no parking)	16 - 18 ft
2 - way lane parallel parking on one side	18 - 20 ft
2 - way lane parallel parking on two sides	26 ft.
2 - way road parallel parking on two sides	34 - 36 ft.
2 - way road diagonal parking on one side	36 ft
2 - way road diagonal parking on two sides	45 ft
2 - way road perpendicular parking on one side	36 - 40 ft
2 - way road perpendicular parking on two sides	54 - 60 ft



# CONSIDER—

## SWIMMING POOLS

- Minimum size is 35 ft. by 70 ft.
- Leave design and construction of the pool to an expert
- Locate shallow end near bath house or locker rooms to minimize accidents and avoid congestion at the diving board
- Locate wading pool near shallow end of adult pool

## SKATING AND CURLING RINKS

- The curling rink should be enclosed because of the necessity for a smooth and well-kept ice surface.
- It is a good idea to provide locker space in conjunction with both curling and skating rinks.
- The waiting area, especially for hockey, should be spacious with plenty of seats.
- The partition separating the ice surfaces from the waiting areas should be glazed.
- Separate dressing areas for hockey teams should be provided.
- In lighting the ice surface, care should be taken to avoid areas of shadow.

## OUTDOOR PLAYING FIELDS

- See pages 112 to 118 for the regulation layouts, dimensions and orientation of various playing fields, courts and pitches.
- All playing fields and areas for athletic activities should be located within easy access of locker and shower facilities.
- The baseball diamond should be laid out so that the players face north and not into the sun. The spectators should be protected from foul and fly-balls with wire netting.
- Do not skimp on the end zone areas for the football field.

## THE GYMNASIUM

- The minimum size is 48 ft by 80 ft, this does not include space for spectator seating.
- A 20 ft. ceiling is an absolute minimum.
- Hardwood flooring is recommended.
- Adequate storage space should be available for sports and gym equipment.

## BOWLING ALLEYS

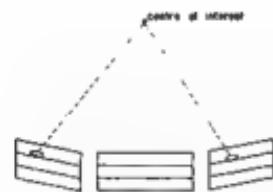
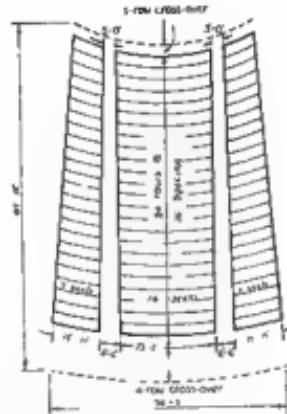
- Each alley, including the pit and approach, is 82'2" long. At least another 8'0" is necessary for spectator and player seating.
- Each row of benches for spectators or players should be 3'6" or 4'0" wide.
- Each alley is 3'6" wide, not including the 8" gutters and the 9½" return.
- Hard maple and pine are the recommended flooring materials.

# BLEACHERS, AUDITORIUM & THEATRE SEATING STUDY

- Always use a sloping floor of either permanent or temporary construction. When the auditorium is to be put to a variety of uses, the sloped floor should be removable.
- For an auditorium seating more than three hundred persons, use curved rows of seats.
- The maximum number of seats in a row should be fourteen.
- No seat should be more than seven seats from an aisle.
- Each seat requires at least twenty-two inches width.
- Back to back space between seats should never be less than thirty inches.
- Aisle widths are a minimum of three feet.
- On non-sloping floors use non-fixed seats.
- Note attached diagram for seating plan and aisle arrangement.

## BLEACHERS

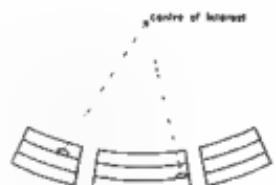
- Consult the architect or interior designer who is familiar with the best designs available for furniture and its storage, and with general seating layouts.
- Use portable bleachers and chairs in the gymnasium and multi-use auditorium.
- Insist on ample storage space for bleachers and chairs so that they are not stacked against the gym walls or in other spots where they could constitute a fire hazard.



STRAIGHT CANTILEVER SIDE BANKS—  
SAME DEFECTS AS STRAIGHT ROWS  
BUT TO A LESSER DEGREE STEPS  
IF REQUIRED IN AISLES WILL BE  
UNSAFE



STRAIGHT ROWS—UNCOMFORTABLE FOR  
SPECTATORS AT SIDE



CURVED ROWS—RECOMMENDED  
FOR COMFORT, EASE OF VISION  
AND SAFETY

## A PROJECTION BOOTH & MOVIE SCREEN

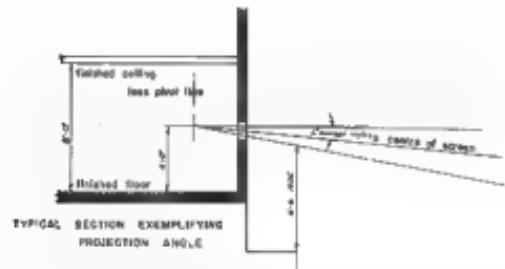
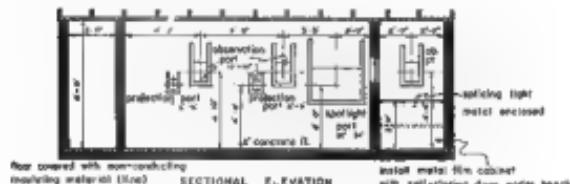


FIGURE 9 SECTION EXEMPLIFYING  
PROJECTION ANGLE



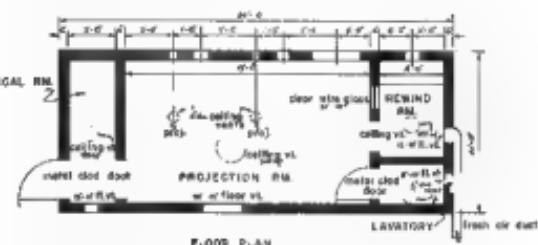
HEIGHT OF SCREEN ABOVE THEATRE FLOOR AT  
STAGE



floor covered with non-slipicing  
matting material.

第5章第1节练习题

install metal film cabinet



DETAILS OF PROJECTION SUITE TO ACCOMMODATE TWO  
PROJECTORS AND SPOTLIGHT OR STEREOPTION

## THE MOVIE SCREEN

Screens are classified according to construction, surface and reflective characteristics: solid, porous, perforated, and translucent (for rear projection only). Surfaces, except translucent type, may be diffuse or specular, the latter being used in narrow and relatively deep auditoriums where light is concentrated on seats immediately in front of the screen. The diffuse type is appropriate to wider theatres.

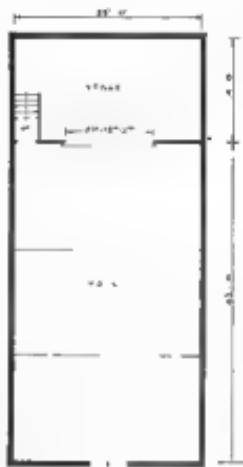
## ABOUT PROJECTION ROOMS

- A projection booth is a fire hazard and should have a separate exit to the outside
- Fire doors must be used and they should open outward from the projection booth.
- All ports opening into the auditorium should have vertical sliding shutters, glazed or otherwise.
- The floor should be of concrete and so constructed that it will not vibrate due to the action of the machine
- Note the accompanying sketches for details.

## THE STAGE



C. E. SPATZ



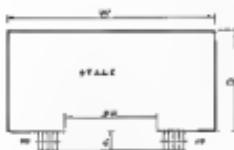
D. J. AM

#### A MINIMUM STAGE

The dimensions of a stage are influenced, to a large extent, by the size of the hall or auditorium which it is to serve.

The minimum auditorium under consideration is one seating 150 persons and, based on the standard of 7 sq ft per person, has a floor area of 1050 sq ft. Dimensions of the auditorium are therefore 42 ft in length and 28 ft in width.

Due to the restricted area of a minimum stage, many facilities of the larger one must be omitted. The stage necessary for the efficient performance of large theatricals is naturally very complex and beyond the scope of this booklet. For example, the plan opposite does not include storage space for scenery or costumes, nor is a workshop included. Dressing or changing would have to be done behind screens in the wings of the stage. As the stage area shown here is an absolute minimum, provision of dressing rooms, storage and work-shop space could be made in addition to the 25 ft by 14 ft area shown.



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Environ Biol Fish (2007) 79:45–50

## SOME GENERAL STANDARDS FOR PLANNING A STAGE

W = width of stage

equal to or greater than the auditorium at its widest point (or 2 times width of proscenium opening).

### **D - depth of tissue**

20 ft minimum, 25-30 ft desirable (or 1½ times width of the precentrum opening)

### Now a prospectus and the

20 to 25 ft (or  $\frac{1}{2}$  width of stage)

ph - proscenium height

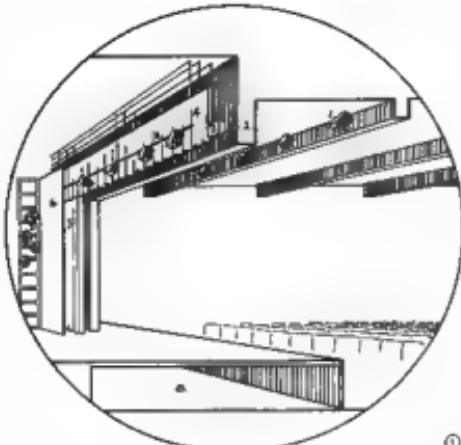
10 to 12 ft. minimum

sh = stage height

usually 4 ft above auditorium floor level, although this figure can vary with sight lines and distance of the audience from the stage.

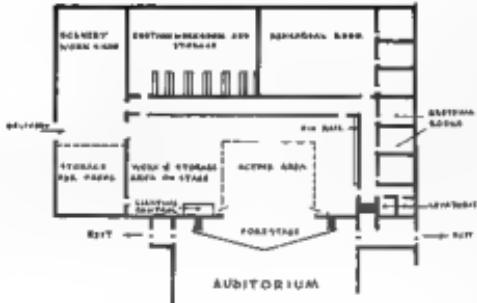
fs - forecast

usually 4-6



#### SUGGESTED LAYOUT FOR LIGHTING OF ACTING AREA ON A STAGE

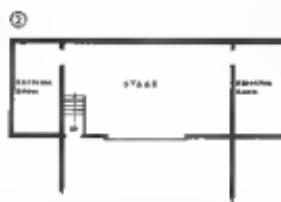
- 1 Spots concealed behind beam near front of auditorium
- 2 Proscenium arch
- 3 Proscenium curtain on traveller track
- 4 "Grand Drapery"
- 5 Spots on batten
- 6 "Tormentor"
- 7 Spots on Tormentor adder
- 8 Chair storage under stage



#### A LARGER STAGE

Facilities highly desirable and strongly recommended for stage and backstage

- Dressing rooms
- Costume work room and wardrobe
- Workshop space
- Make-up room with adequate mirrors and proper lighting
- Storage space convenient to stage and, if possible, on same level
- Lighting units and equipment
- Cyclorama curtain



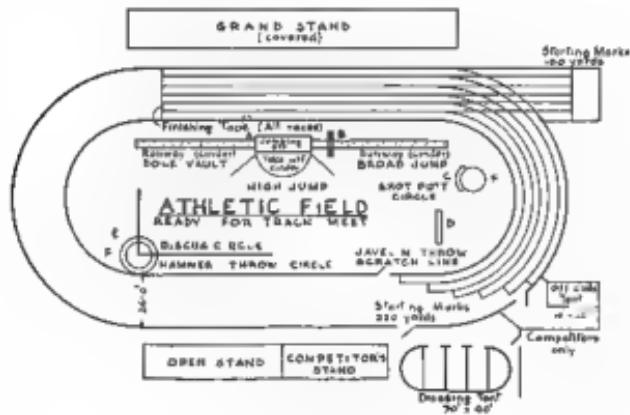
#### SIMPLE DRESSING ROOM ARRANGEMENTS

- 1 An efficient and economical arrangement but does not readily allow future expansion of the actual acting area of the stage.
- 2 This plan permits future deepening of the acting area. Dressing room partitions may be removed to give additional wing space.
- 3 The compact nature of this arrangement enables expansion in all directions. Heating plant might be included easily in the basement.



BASMENT PLAN

# STANDARD SPORTS DIMENSIONS



(A)

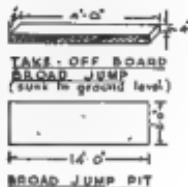


**TAKE-OFF BOX FOR POLE VAULT**



**POLE VAULT PIT**

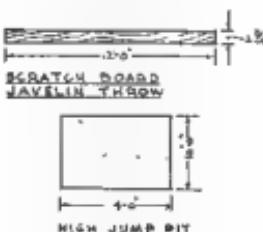
(D)



(E)



(F)



(G)

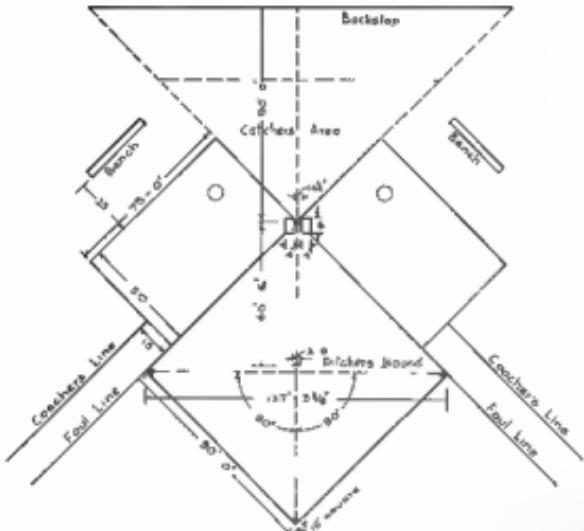


**SHOT PUTT AND HAMMER THROW CIRCLE**

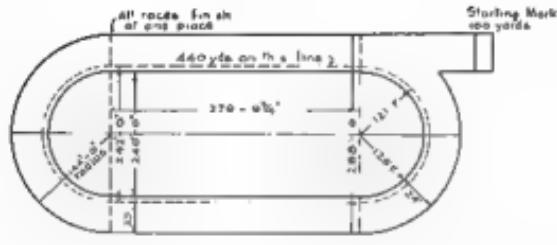
(H)



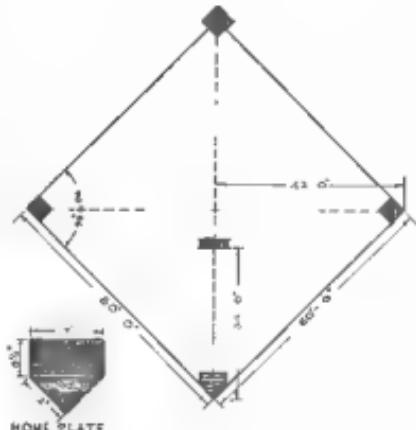
**DISCUS CIRCLE**



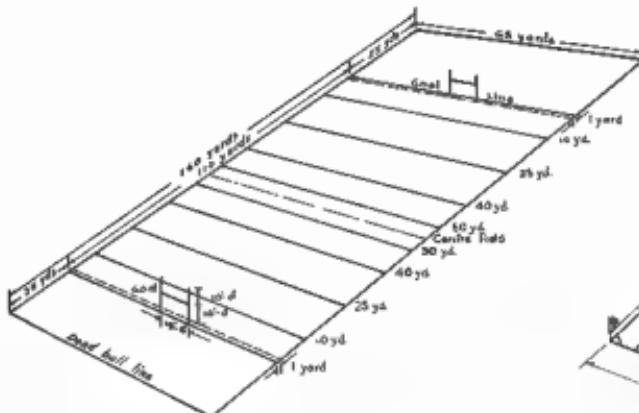
### BASEBALL DIAMOND



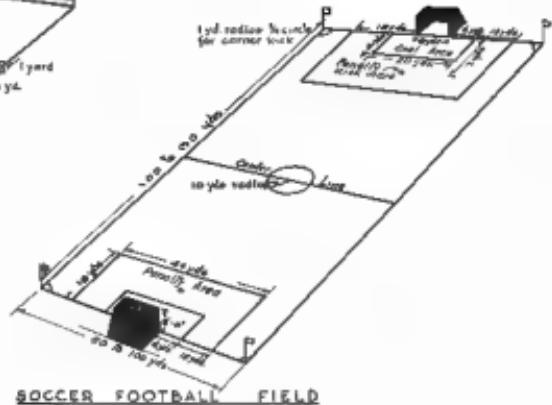
QUARTER MILE TRACK



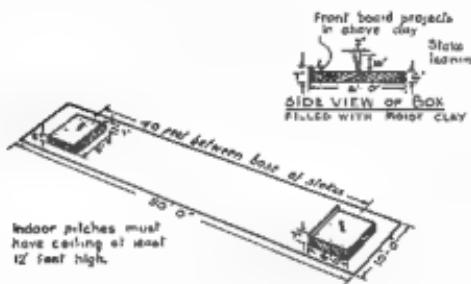
SOFTBALL DIAMOND



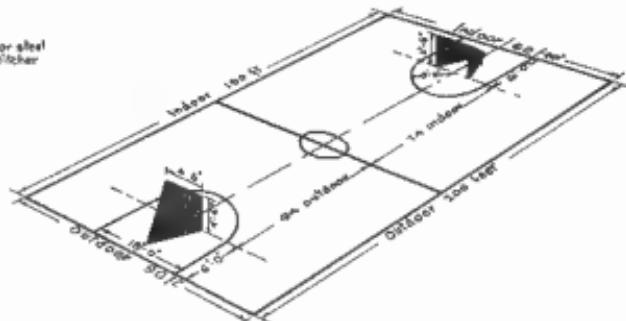
RUGBY FOOTBALL FIELD



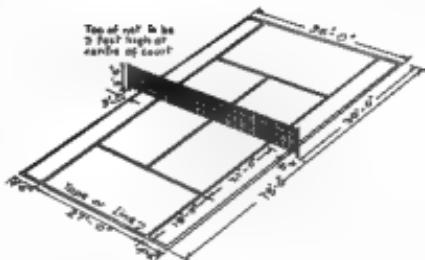
SOCER FOOTBALL FIELD



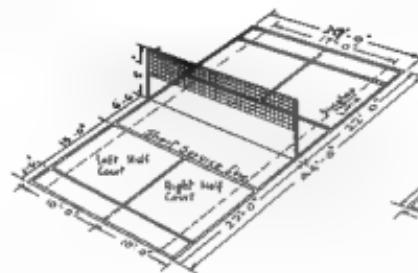
**HORSESHOE PITCH**



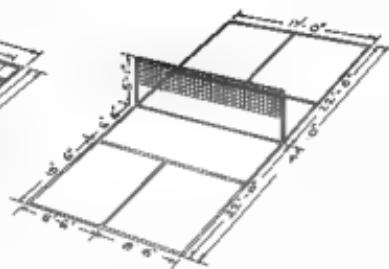
BOX LACROSSE FIELD



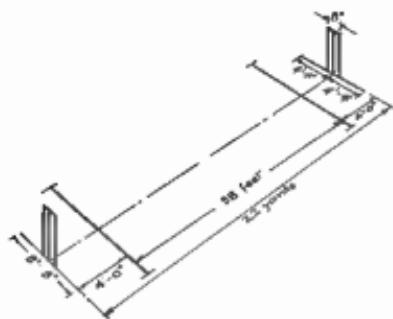
TENNIS COURT



BADMINTON COURT (DOUBLES)



BADMINTON (SINGLES)



CRICKET PITCH

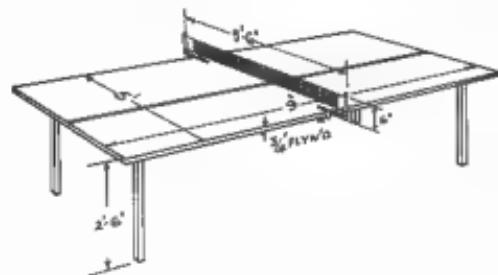
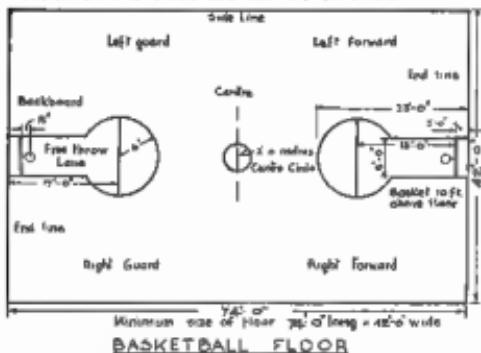
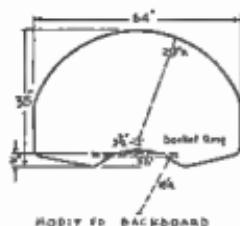


TABLE TENNIS

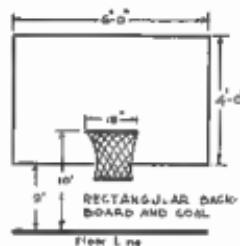
side and end lines should be at least 3 ft from walls.



**BASKETBALL FLOOR**

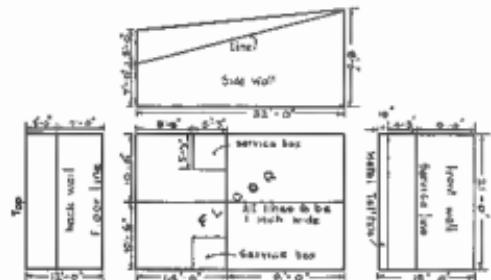


## BASKETBALL BALKBOARDS

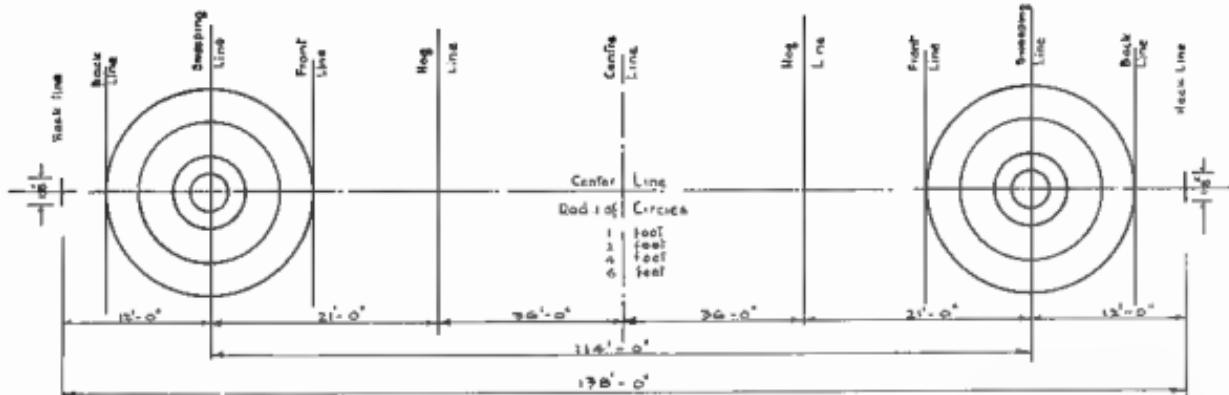


A diagram of an ordinary tennis net, showing its height and the width of the playing court. The net is positioned 3 feet above the ground, and the width of the court is 36 feet.

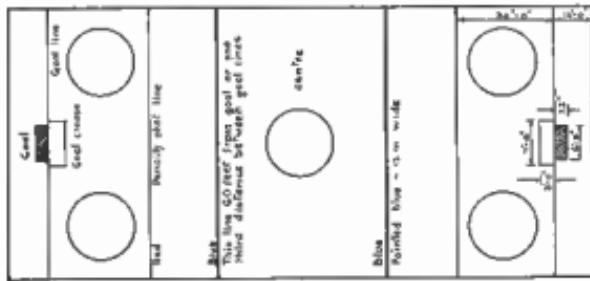
VOLLEYBALL COURT



SQUASH COURT



CURLING RINK



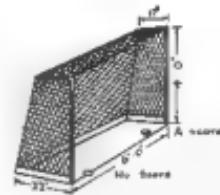
HOCKEY RINK

#### RINK SIZES

Minimum ice surface = 80 x 85

Suggested ice surface = 100 x 100'

Ideal ice surface = 200 x 85'

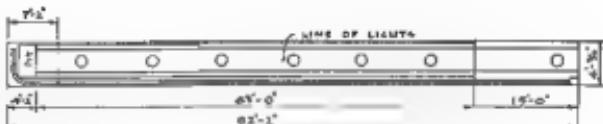


GOAL NET

## BOWLING AND BILLIARDS

Bowling and billiards are two activities becoming more popular day by day. Although most smaller communities are unable to afford the installation of facilities for these activities, it is felt that in the larger Centres their inclusion would be worthwhile. They are types of entertainment that appeal to all age groups and would, no doubt, prove an asset both financially and socially. If installed as concessions in a well organized Community Centre, there is no reason why they cannot be operated at a profit, and in this manner help to support other non-revenue producing activities.

The drawings on this page present standard dimensions of sets of one, two or three alleys. Only the actual alley with pits and 15'-0" runway is shown. Space for setting is necessary at the end of the runway, thus implying that a floor length of at least 20'-0" is necessary for the installation of alleys.



ONE ALLEY



TWO ALLEY



THREE ALLEY

## SPACE REQUIRED FOR BILLIARD TABLES

Size of Table	Overall Size Measuring Outside of Rails	Space Required Allowing Five Feet All Around
4'-0" x 8'-0"	4'-8" x 8'-8"	14'-8" x 18'-6"
4'-6" x 9'-0"	5'-0" x 9'-2"	15'-0" x 19'-2"
5'-0" x 10'-0"	5'-8" x 10'-8"	15'-8" x 20'-2"
5'-6" x 11'-0"	6'-0" x 11'-2"	16'-0" x 21'-2"
6'-0" x 12'-0"	6'-7½" x 12'-6"	16'-8" x 22'-6"

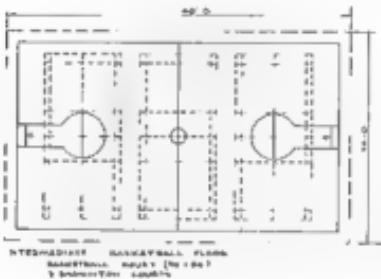
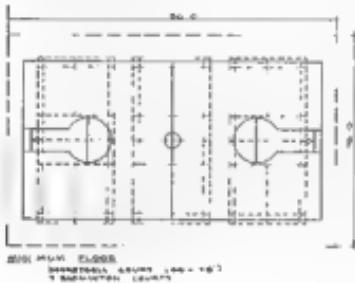
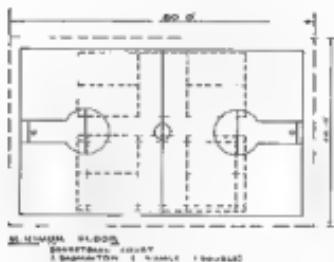
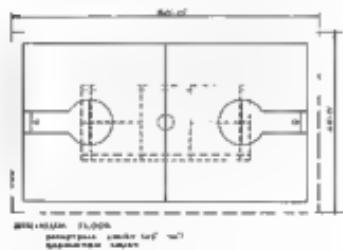
When more than one table is placed in a room a minimum of five feet should be allowed from table to wall or column or other obstruction, and at least four feet between tables.

## GYMNASIUM FLOOR LAYOUTS

In planning a gymnasium, the immediate concern is the provision of sufficient floor space to permit inclusion of official-sized play courts. In almost every case, it will be found necessary to use the same floor area for several types of indoor sports. Shown on this page are some possible arrangements of play courts. It can be seen that the number and arrangement of play courts determines the ultimate floor size.

The dimensions of the play courts adhere to current 1948 official court sizes.

Note: Apart from changes in total length and total width of playing courts, no other dimensions can be changed (See pp. 115-116)



# PRAIRIE RURAL HOUSING COMMITTEE

In February 1947, a meeting of officials of the governments of the three prairie provinces, the three prairie universities, the Dominion Experimental Station at Swift Current, and the Central Mortgage and Housing Corporation, was held in Saskatoon. The purpose of this meeting was to stimulate interest in rural housing and its related problems among people who were actively concerned with the situation. It was generally recognized that there was a great deal to be done in obtaining new information which would result in improved farm house construction and standards in the prairie provinces. To avoid duplication of effort, it appeared that the logical development would be a co-ordinated program in which the three prairie provinces would participate in full co-operation with the Central Mortgage and Housing Corporation and appropriate Federal Government Departments. This program would consist mainly of research into problems related to farm home planning and farmstead layout. This would include home and farmstead planning, materials and methods of construction, service equipment for heating, cold storage, electrification, water supply and sewage disposal. A further step was suggested that would take into consideration the broader aspect of rural community planning, particularly with reference to the planning and construction of community centres.

The result of this Saskatoon meeting was the formation of the Prairie Rural Housing Committee, a committee whose function is to co-ordinate research projects concerned with Rural Housing, Rural Community Centres and Related Physical Planning, in an effort to improve living conditions in the rural areas of the prairie provinces and to recommend to the participating governments the specific research projects which should be undertaken.

Thus far, the Committee has recommended a total of nine projects which are now completed or are in progress.

For information regarding the findings of these research projects, contact the Departments of Agriculture or the universities in any of the three prairie provinces.

Project 1—A project concerned with the planning and design of farm homes.

Project 2—A study into the comparative costs of wall construction, the selection of wall materials, including consideration of structural material, insulation and vapour barriers. Research into rammed earth construction and cinder concrete construction would also be included in this project.

Project 3—A study into the development of improved methods of installing running water and sewage disposal systems for farm houses.

Project 4—A study of farm kitchen planning. A project related closely to Project 1.

Project 5—A study of the many and varied problems arising from the methods of heating the farm home.

Project 6—Consists of investigations into problems related to the use of electric lighting and appliances on farms, considering the special needs of farms using hydro electric power and those using farm plants.

Project 7—A project concerned with the study and designing of community centre buildings so that they might best fit the needs of rural communities.

Project 8—An investigation into the needs and methods of remodeling farm homes, including replanning, rebuilding, renovation and additions, with special emphasis upon personal surveys of existing farm houses to determine and establish types of remodeling problems on the prairies, so that material can be collected and prepared in a form suitable for publication.

Project 9—A thorough investigation of the performances of various paints and painting methods, with special emphasis on how these materials and methods compare in cost, time of application and effectiveness.







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